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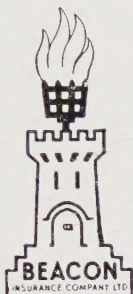
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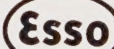
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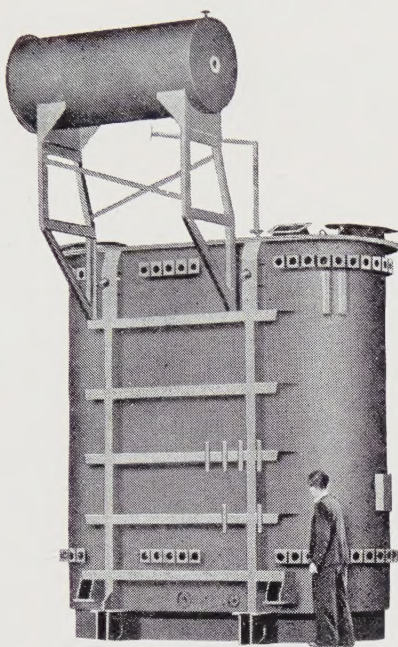
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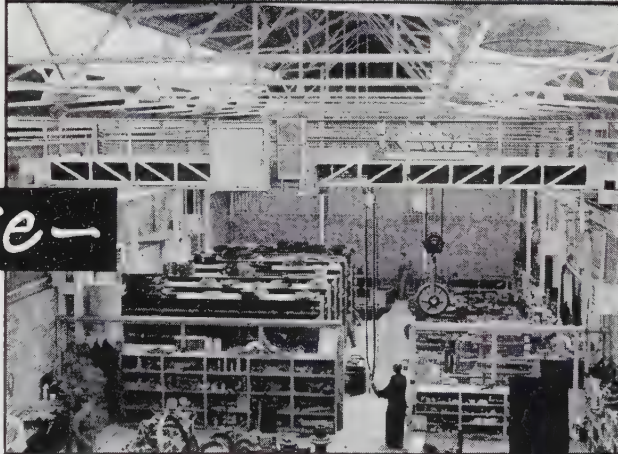
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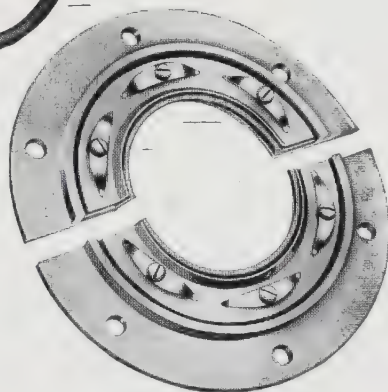
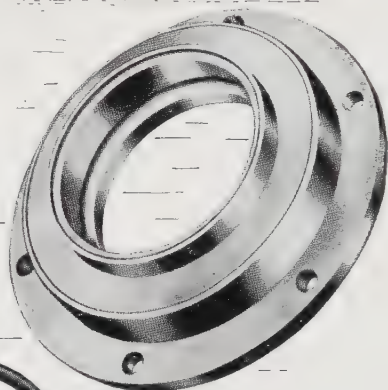
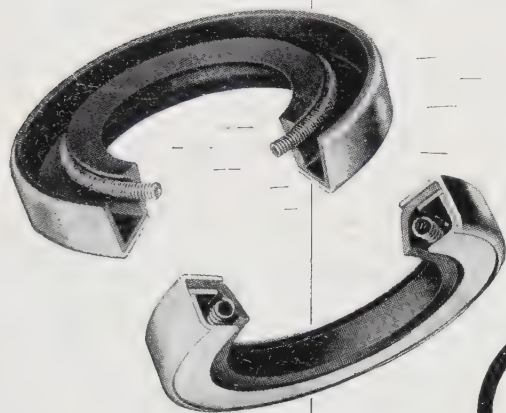
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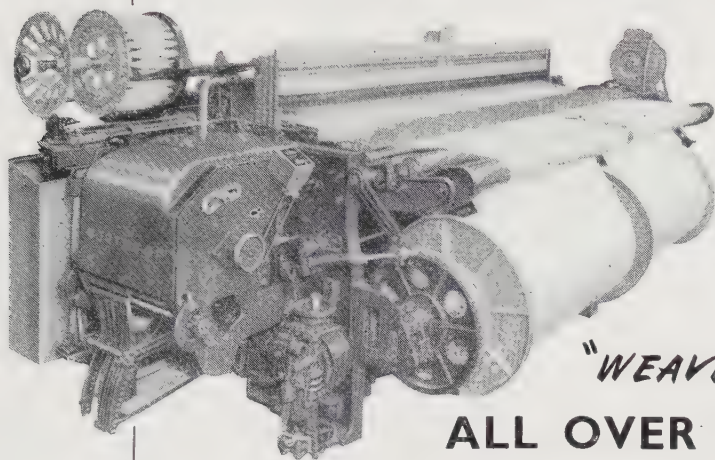
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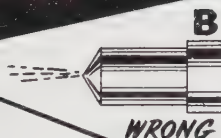
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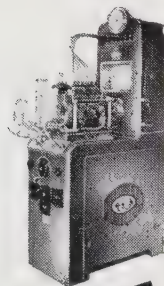
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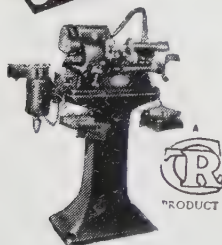
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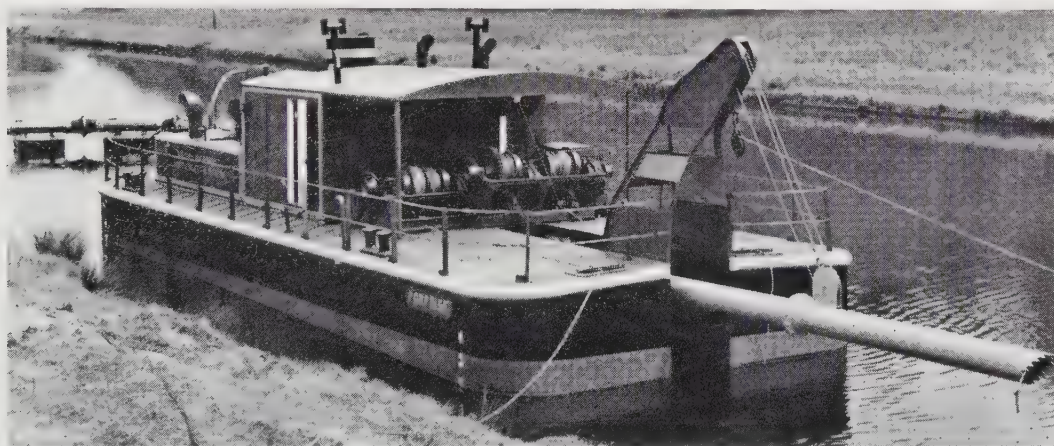
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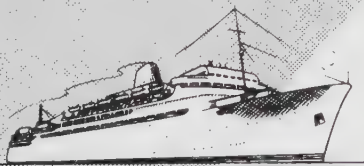
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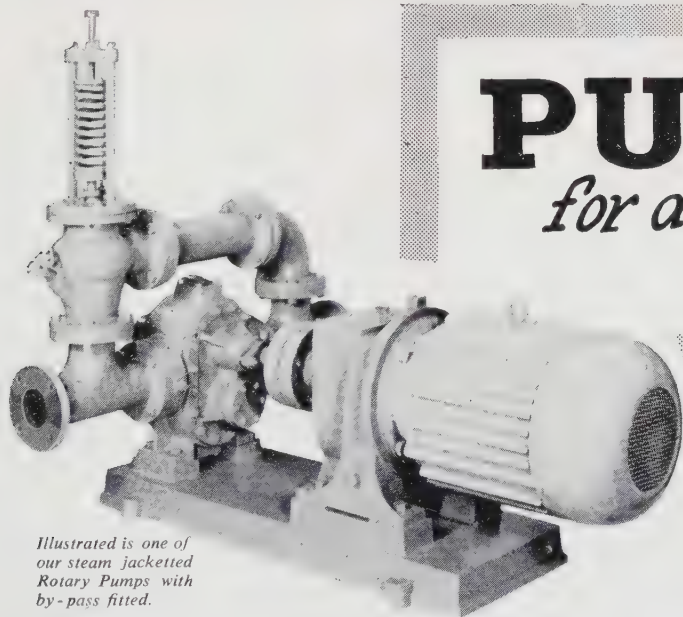
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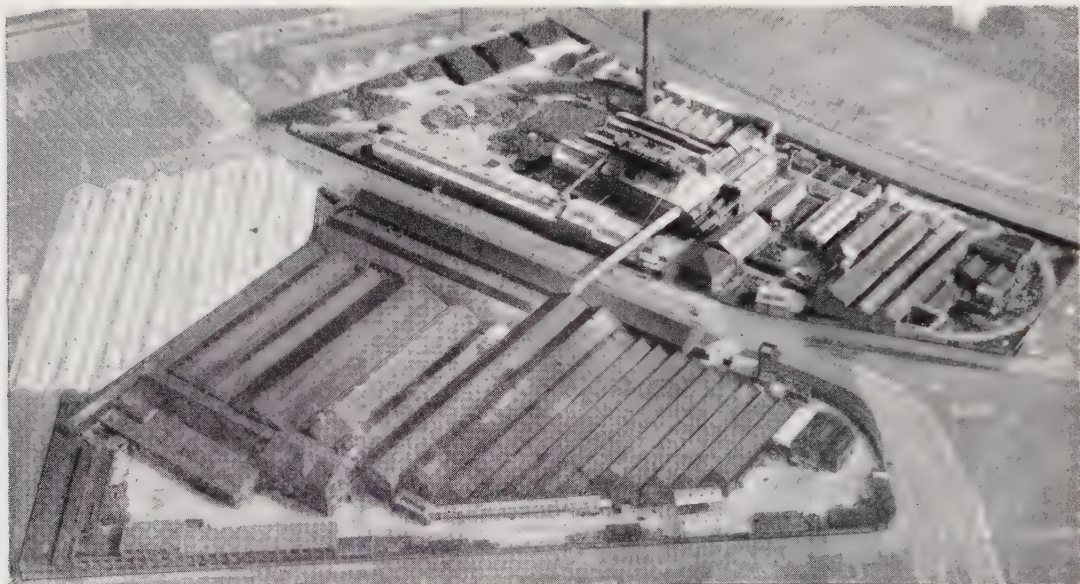


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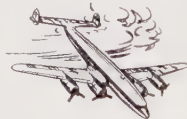
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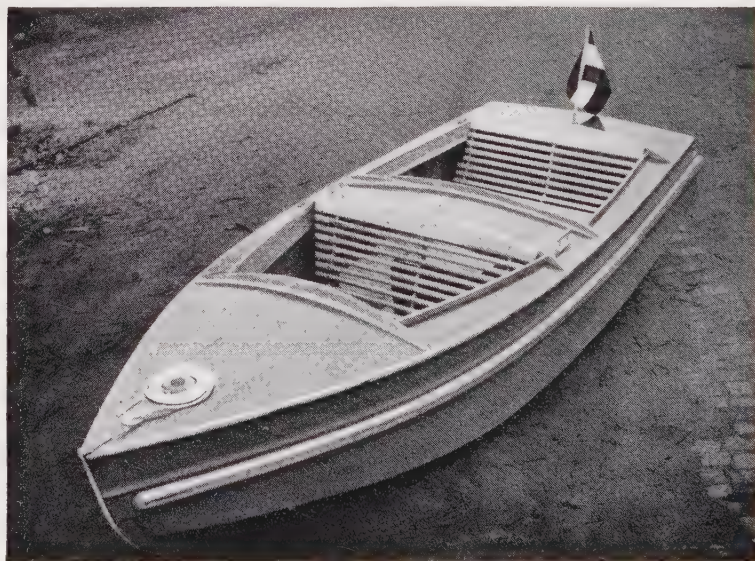
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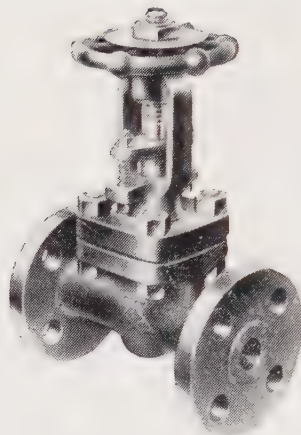
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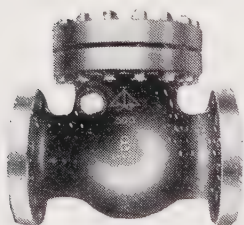
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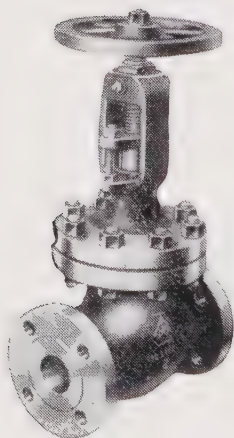
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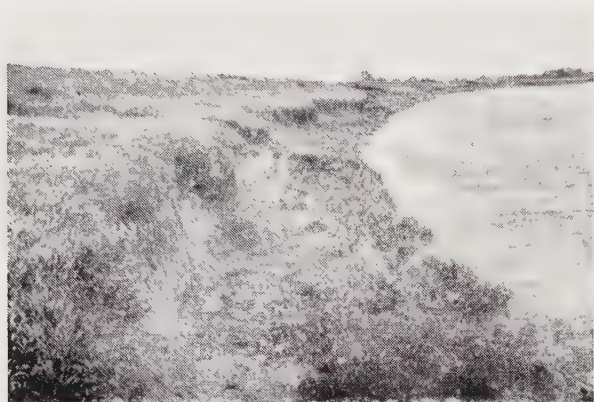
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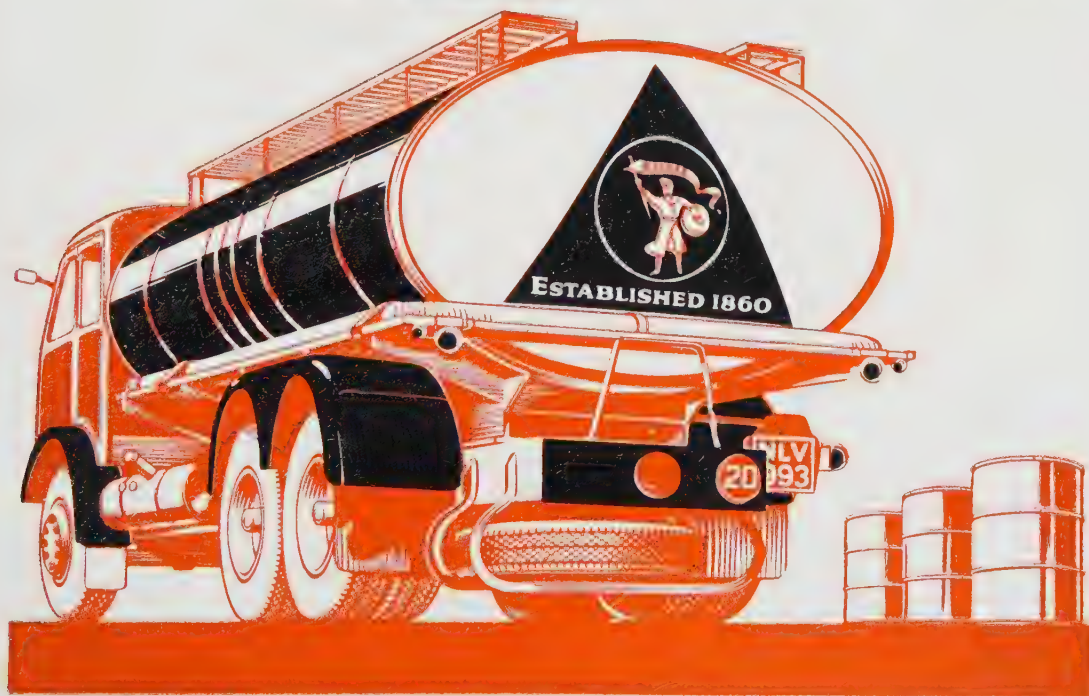
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C O N T E N T S

Acknowledgements	52
Preface	55
The History of the Inland Waterways of the World	56
The History of the Inland Waterways of Great Britain	58
The Administration and Operation of the Inland Waterways of Great Britain ...	63
The Administrative Headquarters of British Transport Commission Inland Waterways	65
Broad and Narrow Waterways	67
The North Western Division of the British Transport Waterways	78
The Leeds and Liverpool Canal	80
The Leeds and Liverpool Canal—Industrial Developments	87
A Detailed Itinerary of the Leeds and Liverpool Canal in six stages	89
STAGE ONE—Liverpool to Wigan and the Leigh Arm	89
Section One—Pall Mall to Litherland	90
Section Two — Litherland to Burscough	96
Section Three — Burscough Bridge to Crooke Bridge, Wigan	97
Section Four — The Canal in the Borough of Wigan from Crooke Bridge to Top Lock, Aspull	99
Section Five — The Leigh Arm	100
STAGE TWO—Wigan to Blackburn	103
Section One — Top Lock, Aspull, Wigan to Cowling Road Bridge, Chorley	103
Section Two—The Municipal Borough of Chorley	104
Section Three — Botany Bridge, Chorley, to Cherry Tree Bridge, Blackburn	105
Section four — The County Borough of Blackburn	106
STAGE THREE — Blackburn to Burnley	108
STAGE FOUR — Burnley to Nelson	113
STAGE FIVE — Nelson to Skipton	115
STAGE SIX — Skipton to Leeds	120
How a Canal Works	130
The Men of the Waterways	135
Holidays on Canals	137
Angling on the Waterways	147
Bird Life on the Waterways	148
General Information	151
A Dictionary of Terms Used on the Waterways	155



Fifty-two

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In an effort to check on details of the route, information was supplied by the

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PREFACE

This publication is one of a series that will be produced by the Publishers on behalf of the British Waterways in their various Divisions. It has not proved easy to write for several reasons, not the least being the difficulty of dealing with a subject that has received scant attention and the inclination to try and cram more than is strictly necessary into a book dealing with only one canal.

This book only follows the Leeds and Liverpool Canal to the junction of Leeds where it joins the Aire and Calder Navigation, and does not attempt to deal in any detail with the other canals and waterways coming under the jurisdiction of the British Transport Commission in the North Western Division. Other waterways are mentioned in order to present a better overall picture. (This is the reason for the article on the Bridgewater Canal and the Manchester Ship Canal.) With the renewed interest in canals and the several development plans that are envisaged, it will be realised that some of the statements made in this book may alter with the passage of time.

Strictly speaking the word "canal" applies only to a completely man-made artificial waterway, whereas the term "waterway" can refer to a river or stream which is widened, dredged or so altered by man as to make it suitable for the purpose of navigation. In this book no account is taken of the use of canals for irrigation or drainage purposes.

The words "Canal" and "Waterway" are for all practical purposes interchangeable, and they are so used in these pages. The term "British Waterways," is a comprehensive phrase indicating all those canals, waterways or rivers, irrespective of their size or location which are under the control of the British Transport Commission.



THE HISTORY OF THE INLAND WATERWAYS OF THE WORLD

Man has made use of rivers for navigation from earliest days and has cut artificial waterways as links between rivers ever since. These waterways have not been confined to one country, neither in the opinion of some scientists, are they to be found solely on the earth. It has been suggested (and as hotly denied) that the lines which may be seen to cross the surface of the planet Mars are artificial canals that have been cut to preserve water for irrigation purposes.

A notable example of early canal construction is the great Nahrawan Canal in Iraq, which was probably constructed about 2000 B.C. It was simi-

lar in size to the Manchester Ship Canal and in addition to its use for the passage of barges, it provided an irrigation system for the area. The Egyptians were also great engineers and Senusret (about 2000 B.C.) finding that his ships could not pass the first cataract on the River Nile, dug a canal to by-pass this obstacle. Perhaps the most famous of the early canals was the Grand Canal of China, the first section of which, 600 miles long, was completed in 610 A.D.

Whenever the word "canal" is mentioned, the names "Suez" and "Panama" spring to the mind, but they are among the newcomers in the canal

CANAL	YEAR OPENED	LENGTH—MILES	WIDTH—FEET	DEPTH—FEET
Gota (Sweden) (Reconstructed 1916)	1832	115	47	10
Saulte Ste. Marie (U.S.A.) ..	1855	1.6	100	16
Suez (Egypt)	1869	100	197	34
Amsterdam (Holland)	1876	16½	88	23
Welland (Canada) (Reconstructed 1929-30)	1887	23¾	200	25
Corinth (Greece)	1893	4	72	26¼
Manchester (England)	1894	35½	120	28-30
Kiel (Germany) (Reconstructed 1914)	1895	61	150	45
Saulte Ste. Marie (Canada) ...	1895	1.11	142	20¼
Elbe & Trave (Germany) ...	1900	41	72	10
Panama (U.S.A.)	1914	50½	300	45
Princess Juliana (Holland) ...	1935	20	52	16

world. It will readily be seen from the accompanying list that ship canals often form but a small part of the intricate net of waterways covering the interior.

The Suez Canal was built by the great engineer de Lesseps and cost over seventeen million pounds. Its great importance to world trade has been shown by the trouble which followed when it was closed for a few months. The average time taken for a ship to pass through this waterway is about eleven hours and some one million tons of shipping use this route each week.

The builders of the Panama Canal met with grave difficulties, not the least being the deadly outbreaks of fever which decimated the labouring and technical forces. The eventual triumph was due as much to the Doctors and Sanitation Engineers as to the actual constructors of the Canal. The Panama links the Atlantic with the Pacific and it contains twelve locks in fifty miles. Including passing through the locks, a ship can pass from ocean to ocean in about eight hours.

Canals in Europe have been used since Roman times, but it was not until the 14th century that European engineers re-discovered how to make locks.

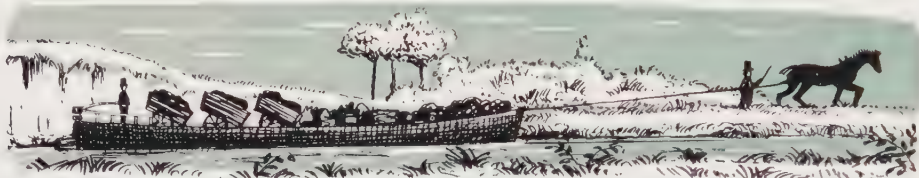
The first pound lock in England was constructed by a Welshman, John Trew, of Glamorgan, for the Exeter Canal in 1566. When locks became general they did away with the old "flash weirs." The great Dutch North Sea Canal, finished in 1876, had two Englishmen, Messrs. Crocker and Burns, as its engineers. One of the causes which gave rise to the building of this particular canal was the industrial revolution which was taking place across the sea in England.

Germany to-day relies very much on her system of inland waterways and their significance was realised in the last war when determined attempts were made to breach the canals, including the famous raids in the Dortmund-Ems Canal. The Scandinavian countries also have their inland systems linking ports and industries. More recently the Russians have completed the unification into one system of the five seas of the U.S.S.R., the White, Baltic, Black, Asov and Caspian Seas, by means of the Volga-Don Canal.

Despite the great road, rail and air internal transport systems, inland waterways are an essential and irreplaceable economic necessity in many of the countries of the world.



The History of the Inland Waterways of Great Britain



The rivers of England have always been used for transport ; they helped the Danish invaders, for instance, when in 894 they sailed up the River Lee as far as Ware and also up the River Severn to raid the City of Worcester.

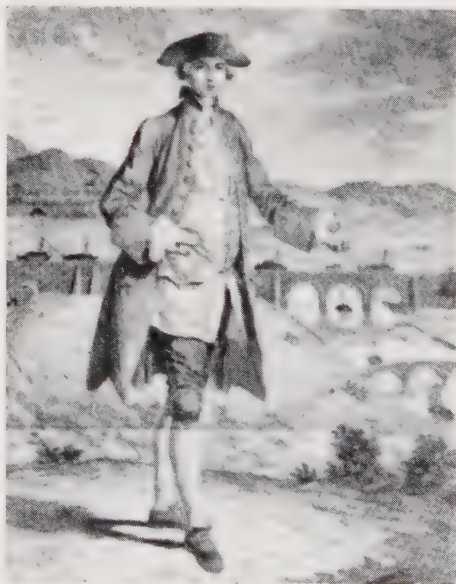
In the Middle Ages the rivers, together with coastal craft, were almost the only means of moving heavy goods and coal. The Severn was the greatest, because of the collieries on its banks, and traffic passed constantly from Bristol to Gloucester, Worcester, Bewdley, Bridgnorth and Shrewsbury, with a little up to Welshpool. In the North-East were a number of navigable rivers ; the Trent was busy ; and in the east the Fenland waterways were used both for navigation and drainage. The Thames again gave access from the sea to Oxford and sometimes higher.

In the seventeenth and eighteenth centuries efforts were made to improve the river navigations that already existed, and to make the smaller rivers navigable also. During this time such rivers as the Aire and Calder and the Weaver were made navigable and the Mersey and Irwell were made navigable to Manchester. In turn, the improvement of rivers led to the building of canals.

Sam Berry initiated the canal era with his completion in 1755 of a lateral

canal alongside the Sankey Brook from St. Helen's to the Mersey at Warrington.

The first modern canal was the Sankey Brook (St. Helen's), partly opened in 1757 to carry coal from the St. Helen's coalfield to the Mersey and then up the Weaver to the salt industry located there. The more famous Bridgewater Canal was authorised in 1759, and opened from the Duke of Bridgewater's coal-mines at Worsley to near Manchester in 1761.



3RD DUKE OF BRIDGEWATER

Engraving by H. Cook from the National Portrait Gallery

The Duke, who had probably seen the Continental canals in the course of a Grand Tour as well as the Sankey Brook nearer home, financed the canal himself, and soon afterwards extended it into Manchester and then to Runcorn to provide a better route from Liverpool to Manchester than the Mersey and Irwell river line. His engineer, the famous James Brindley, was a farmer's son born near Tunstead in the Peak District in 1714 and who died in September, 1772, at his home at Turnhurst at the age of fifty-six. As a young man he had been a millwright, and was introduced to the Duke in a fortunate moment for both. He built the Duke's



JAMES BRINDLEY
Engraving by F. Parsons
from the National Portrait Gallery

canal for him, including the Barton aqueduct over the Irwell which was regarded as one of the engineering wonders of his day, and which was replaced by the present Barton swing aqueduct when the Manchester Ship Canal was built, and the great flight of

locks down to the Mersey at Runcorn. At the same time as he was working on the Runcorn extension he was building the Trent and Mersey Canal (then called the Grand Trunk because of the branches that were expected to spring from it) from the Duke's Canal to the Trent, the Staffordshire and Worcestershire from the Grand Trunk to the Severn at Stourport, with a branch at Birmingham, and the Coventry and Oxford canals from the Grand Trunk to the Thames at Oxford.

This linking of the Mersey, Trent, Severn and Thames was not completed till many years after his death. Not only did he carry out great engineering feats in tunnelling, aqueduct, bridge and lock building, but he trained as his assistants many like Robert Whitworth, Hugh Henshall and Thomas Dadford, who were also to become great engineers in their day.

The Duke had built his own canal, and had been with Josiah Wedgwood a prime mover in the Trent and Mersey. Now the industrialists, colliery owners and landowners stepped in as they saw the value of canals in enabling raw materials and finished goods to be moved about more easily and much more cheaply than by the inadequate roads of the time. They subscribed the money which completed Brindley's canals, and began others such as the Leeds and Liverpool across the Pennines. Then came in 1792 the great boom known as the canal mania, brought about by the success of the new canals, the growth of industry and agriculture, and the imminence of the war with France. In the two years when it was at its height, thirty new canals were

authorised with a capital of about five million pounds.

By 1820 the system was nearly complete. The more notable additions to Brindley's waterways were three canals across the Pennines, several developments in Yorkshire, a number of waterways to serve the collieries, ironworks and quarries of Derbyshire, a line from the Trent through Leicester towards London to link up with a Birmingham-London line of canal which is now the Grand Union, an intricate network in the Birmingham area, with offshoots to Stratford-upon-Avon and Worcester, a ship canal to improve access to Gloucester from the lower Severn, a number of very busy industrial canals in South Wales to bring coal and iron down from the interior to the sea-ports, and three canals from the Thames to the Severn or the Bristol Avon. In Scotland the Forth and Clyde had been built to link Glasgow to both the seas.



THOMAS TELFORD
*No. 2515. Drawing by W. Brockendon
from the National Portrait Gallery*



JOSIAH WEDGWOOD
*No. 1948. Medallion by W. Hackwood, 1779.
from the National Portrait Gallery*

For another twenty years the system was improved, by additions such as Telford's new and straight waterway from Nantwich to Wolverhampton to speed up transport from Liverpool, his rebuilding of the Birmingham Canal, and the drastic straightening of the Oxford Canal, while in the north Telford's great Caledonian Canal had been finished. By this time the canals were carrying great quantities of coal, ironstone and other raw materials, and of finished goods: ironwork for factories, bricks, tiles, slates and timber for houses, stone for pavements and roads. They were carrying also the coal and lime the countryside needed, and bringing back agricultural produce to the towns, till at their peak the 4,250 miles

of navigable rivers and canals then in existence carried perhaps 30 million tons a year.

They were helped to do so by the improving road system as the turnpike roads developed, and also by several hundred miles of horse tramroads which acted as canal branches, especially in Wales, Derbyshire and the North.

At their peak the better-situated canals were very prosperous : far more so than most of their successors, the railways. They had benefited from comparatively cheap costs of construction, and from the great increase of traffic that had been brought about by the Industrial Revolution, partly the result of the canals themselves. Most of the traffic moved slowly in boats and barges drawn by horses or man-power, and owned by independent carriers — the companies themselves were not allowed to run carrying businesses till

1845. There were, however, express boats carrying small consignments at a higher charge, having precedence over other traffic, and travelling day and night.

On many canals, again, there were regular passenger services ; night sleeping boats between Glasgow and Edinburgh, day services on the Duke of Bridgewater's Canal, between Manchester, Wigan and Liverpool (dropping off at Scarisbrook for the seaside at Southport) ; between Ellesmere Port and Chester ; between Uxbridge and Paddington ; from Preston to Kendal on the Lancaster Canal, and elsewhere, whilst almost every canal had its market boat filled once a week with housewives.

Then came the railways. Contrary to popular ideas, there was no concerted effort by the railways to break up the canals, because the railways were not

AN EARLY PHOTOGRAPH OF BLISWORTH TUNNEL, GRAND UNION CANAL,
SHOWING LEGGERS EMERGING

Copyright Mr. C. Hadlow



themselves united. Each projected local railway company, however, tried to get rid of the competition of the local canal, either by buying it (and occasionally using it for the railway track) or if necessary price-cutting against it. Some of the canal companies were themselves awed by the new and impressive railways, and few companies were anxious to compete if there was a chance of being bought out on good terms. Only some of the biggest companies made a fight of it.

Three factors were in any case operating in favour of the railways. First, the most important canals were so congested that they physically could not carry more traffic without reconstruction, and this gave an impetus to railway building. Again, this heavy waterborne traffic was causing the canals to be very short of water, in spite of extensive reservoir building. Canal operation in a hilly country like Britain, where the canals are heavily locked, is expensive in water, and many companies were at their wits' end for adequate supplies, a state of affairs which again led to traffic delays as boats waited their turn to move alternately up and down at locks in order to conserve it. Lastly, the railways made a success almost at once of passenger carrying, the purpose for which many of the earliest were mainly built, and which was only a marginal activity of the canals. Therefore they were able to charge a large part of their costs against their passenger revenue, and so could afford to cut rates on heavy goods (the staple income of the canals) against the waterway companies.

The result was the slow break-up of

the canals as a system. For a time they kept their tonnage of goods carried at the price of receiving less and less in tolls to carry it, but afterwards the long-distance traffic began to be lost to the waterways, who were driven back on to local trade where, for one reason or another, they had an advantage. Some waterways spent a great deal of money on modernisation, notably the Aire and Calder, the Weaver, the Birmingham system, the Severn, and the Thames, together with the Leeds and Liverpool, the Bridgewater and the Grand Junction and its associates, now the Grand Union. But most of the companies could not raise the money they needed in face of falling traffic and the movement of industry to the railway. It was now that the steam barge began to supplement the horse-drawn boat, and that the boatman, unable any longer to support a family in a cottage on land in face of the cutting of freight charges by railway competition, took his family with him on the boat to save the rent and the wages of a second man.

The 20th century saw more changes. First and most important, the coming of the motor lorry, which by its mobility and saving of double-handling charges, was to prove the enemy of canal and railway alike. The diesel-engined boat now began to replace both the steam craft and the horse, till to-day there are only a few of each to remind us of earlier methods.

The first decade of this century was a time when men felt strongly that the canals should be developed. A Royal Commission sat, and reported in favour of nationalisation of the principal waterways under a central Board, but there

were too many political troubles about for such a measure to be successful, and nothing was done. During the two wars that followed the canals came under Government control, and between them there was more consideration of their future but little action. Some further modernisation took place, notably on

the Grand Union line and the Trent, but it was left to the 1947 Transport Act to bring most of the waterways for the first time into a unified system. By that time, however, a hundred years of competition from railway and later from lorry had reduced the mileage of waterways still open for navigation.

THE ADMINISTRATION AND OPERATION OF THE INLAND WATERWAYS OF GREAT BRITAIN

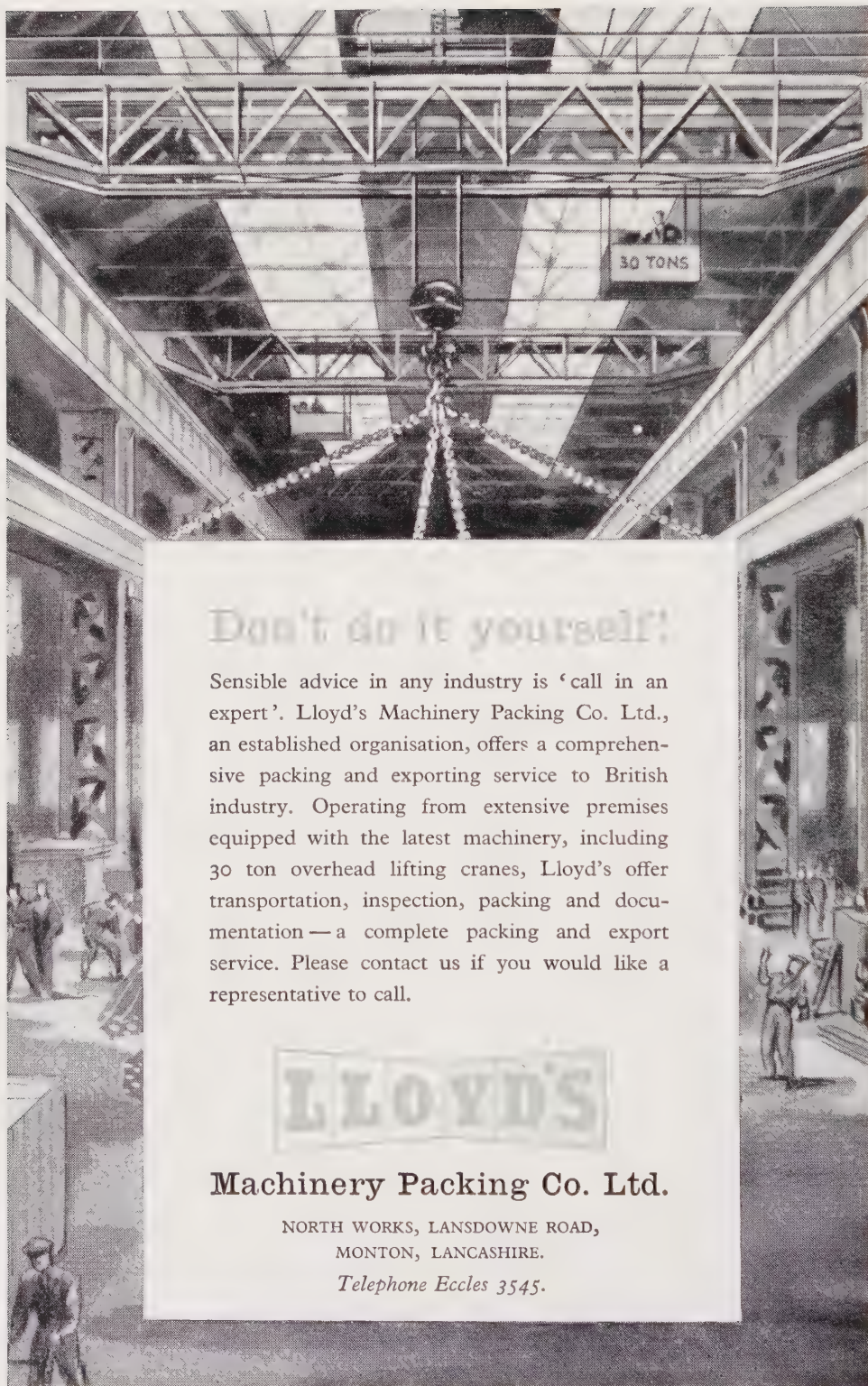
The British Transport Commission through the British Waterways Board of Management is responsible for the administration and control of the major portions of the inland waterways of this country. Under the Transport Act, 1947, seventeen separately owned and operated independent companies, nearly 1,000 miles of Railway Canals and the Government-owned Caledonian and Crinan Canals, were transferred to the Commission. Of the total of 2,170 miles of canals so transferred, 1,400 are in commercial use. It should be noted that by no means all the waterways were transferred; the Manchester Ship Canal, including its subsidiary department operating the Bridgewater Navigation and parts of the Rivers Humber, Nene, Warwickshire Avon and Yorkshire Ouse are still independently owned and operated, as are a few small

canals; moreover the Thames from the Nore to Teddington is under the control of the Port of London Authority and from Teddington to its source is the responsibility of the Thames Conservancy Board.

Following the original plan conceived by Brindley to link up England's four great rivers, the Humber, Thames, Severn and Mersey, the administration is organised into the following Divisions:—

Division	Estuary
NORTH WESTERN based on	MERSEY
NORTH EASTERN " "	HUMBER
SOUTH WESTERN " "	SEVERN
SOUTH EASTERN " "	THAMES

The inland waterways of Scotland are separately managed by officers responsible to the British Waterways Board of Management.



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Entrance in Upper Woburn Place

Telephone : EUSTON 4051

General Manager ... Sir H. Reginald Kerr, K.B.E., C.B., M.C., M.Inst.T.
Principal Traffic Officer ... W. L. Ives, M.Inst.T.

NORTH EASTERN DIVISION

Headquarters ... 1, Dock Street, Leeds, 1. Tel.: Leeds 2-0957,
2-0950, 3-2806.
Divisional Manager ... T. H. Thornton, M.Inst.T.
Divisional Traffic Officer ... A. Thomson.

NORTH WESTERN DIVISION

Headquarters ... Lime Street Chambers, Liverpool, 1. Tel.: Liverpool
Royal 7030.
Divisional Manager ... C. M. Marsh, M.Inst.C.E.
Divisional Traffic Officer ... A. C. Lisle, O.B.E., M.Inst.T.

SOUTH WESTERN DIVISION

Headquarters ... Dock Street, Gloucester. Tel.: Gloucester 25524/9.
Divisional Manager ... G. H. Hughes.
Divisional Traffic Officer ... J. E. Oxley.

SOUTH EASTERN DIVISION

Headquarters ... Willow Grange, Church Road, Watford. Tel.:
Watford 6422.
Divisional Manager ... C. Saywood.
Divisional Traffic Officer ... L. S. Lee.

The Divisional Managers are responsible to Headquarters and the officers in each Division to the Managers.



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Broad and Narrow Waterways

Waterways are classified under these headings and each canal has its own special type of barge, boat, lighter, towed-train or tanker. The broad waterways which are mainly canalised rivers, can be used by quite large craft with a carrying capacity of up to 400 tons. In the main these connect the ports with the waterheads at inland centres. Cargoes can be discharged from ship to barge or loaded from barge to ship and transported directly to the waterside premises of industrial firms or sent away by ship to foreign ports.

The narrow waterways provide a country-wide network for the distribution of goods to the great inland industrial and commercial centres, and can only be used by boats of 7 feet beam,

70 feet long and with a carrying capacity of approximately 25 tons.

Carrying Services

The carrying services over these waterways and canals are operated by a miscellaneous fleet of craft provided by both the Transport Commission and private carriers.

The British Waterway's fleet consists of about one third of the total number of craft on inland waterways and it comprises 100 power and dumb barges used mainly for estuarial and river traffic, 700 special compartment boats, and 400 narrow motor and butty boats. These are painted with the characteristic blue and gold of the Commission.

The narrow boats which normally

A LEEDS AND LIVERPOOL CANAL MOTOR DRIVEN "SHORT BOAT."

Copyright Mrs. A. Rolt



operate in pairs with a total carrying capacity of 50 tons work chiefly on the London – Birmingham – Warwickshire collieries system, the Mersey to Birmingham route and the Mersey-Potteries journey. Between the Yorkshire collieries and the Port of Goole, British Waterways operate a system of “trains” hauled by tugs: in a single haul these can pull about 19 floating “trucks” with a total carrying capacity of some 700 tons.

Boat Dimensions

Canal and river craft may be broadly divided into two groups: narrow boats and wide boats, the latter increasing in size till they join the class of coasting steamers. The length, breadth and draught of all craft is governed by the dimensions of the waterways through which they have to pass.

The dimensions and carrying capaci-

ties of the various types of craft using the waterways are:—

Wide boats and barges using the broad systems vary from 61 ft. long, 14 ft. beam, 4 ft. draught to 150 ft. long, 26 ft. beam, 10 ft. draught, with carrying capacities from 50 to 400 tons, and usually the cargo is stowed in covered holds.

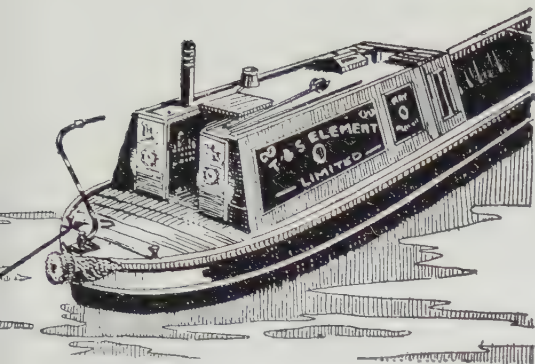
Over the narrow systems, the boats and butties are 70 ft. long, 7 ft. beam, 3 ft. 6 in. draught. They each have a capacity of 25-30 tons. The cargo is in open holds that are sheeted against the weather and any crew accommodation is above deck.

The length and breadth of these boats is governed by the width, depth and lengths of the locks through which they must pass.

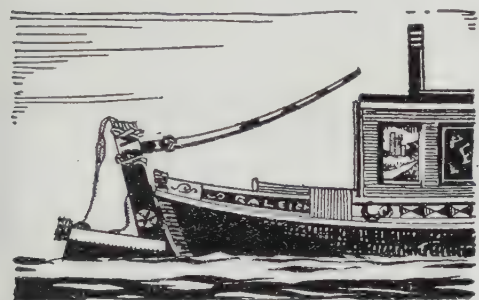
Details of charges, carrying capacities of boats and all other particulars can be



GAUGING A NARROW BOAT
Copyright Mrs. A. Rolt



Narrow Boat—Motor Powered



Butty Boat



Ornamental Chimney



Painted Can

Ram's Head



obtained from the Divisional Managers or the Traffic Officers at the Divisional Traffic Offices.

Narrow Boats

The most familiar type of canal craft are the narrow boats. They were designed when the canals were first cut and are basically the same to this day. Some people think that the early boatmen were gypsies and that this can be seen in the confined caravan-like living space and the bright panel paintings and ram's heads. Usually they operate in pairs, the first boat, which is powered by a diesel oil engine, towing the "butty," which is dumb. On wide waterways they often travel "breasted up," i.e., side by side. Both boat and butty have cabins in the after end and the hatch entrance is near to the tiller and engine control. They are often known as "family pairs" because they are traditionally operated by a family. The boatmen and their wives are both skilled steerers so that one handles the boat and the other the butty. Some narrow boats are used for short haulage, notably in the Potteries and Midland canals, and these are known as day boats; they have no cabin accommodation and the boatmen live on the shore.

Wide Boats

On many waterways, particularly in the North of England, wide boats are used. These are really a form of barge or lighter; while some are self-propelled others are drawn by horses, tractor or tugs. They carry up to 60 tons and are 60-70 ft. long with a beam up to 14 ft. Many have cabin accommodation. On the other wide canals on the North-Eastern and North-Western divisions,

these wide boats are propelled by diesel engines. These boats can be used with open or closed holds.

Elsewhere still larger craft operate : for instance, oil-tankers carrying up to 250 tons on the Aire, Calder and Trent ; craft carrying oil, grain and general cargo of 750 tons on the Gloucester and Berkeley Canal to Gloucester, 400 tons to Worcester, and 150 tons to Stourport ; and vessels up to 400 tons on the Weaver. In addition, cargo-carrying tugs towing other barges may carry up to 1,000 tons in one locking on the Weaver, or 500 tons on the Trent. In Scotland, again, " puffers " of about 150 tons work on the Forth and Clyde and the Crinan canals, and fishing craft pass through the Caledonian and the Forth and Clyde.

Canal craft are designed in many cases to carry particular cargoes ; there are oil, petrol and tar tankers and special chemical containers, the coal-carrying compartment boats, and others.

There are many types of tugs on the waterways, some of which are operated by British Waterways and some by the private lighterage and tug-owning firms. To-day, the majority are diesel engined but a few steam tugs still exist. Many ' tugs ' are now in use which propel the craft from astern.

Each of the Divisions of the Waterways has its own boat building and repair yards. Although there are a number of the old wooden hulls still afloat, timber is giving way to steel in modern construction. Building boats for canal navigation is a specialised task and is still one of the traditional father-to-son crafts. When the hull is completed by a

boat builder it is fitted out for the particular service required. Like ships, boats are commissioned to join the fleet.

Before finally going into service the boat is " gauged " or weighed. This enables the toll charges, based on the weight of the cargo, to be readily assessed. The first gauging is worked out in the weigh dock. The draught of the boat is carefully measured at four points, two on each side both forward and aft. One ton weights are then loaded up to the full capacity and as they increase the draught it is measured for each ton. This information is entered on the boat's register. When in service the toll clerks gauging the boat use the rod with a float in it which measures the freeboard in inches. From this and the information in the register the tonnage of the cargo aboard is easily calculated and the toll charge made.

Control and Boat Movement

The general method of boat control is to arrange for the movement of traffic to obtain the best use from all craft and to eliminate empty, unprofitable running. A boatman paid on a tonnage rate must avoid empty running if he is to earn a good living wage. Careful control is essential to ensure economy in the time taken on the voyage and the turn-round, the allocation of craft to suit the cargoes for which they were designed, the scheduling of voyages to fit into the time of docking and sailing of ships from terminal ports and the avoidance of congestion at ports and wharves. Daily tasks must also be allotted to the tugs or tractors which tow the dumb barges.

The Control Offices have maps on

which are recorded the movement of each single craft, and from this information the instructions for the daily voyages are given. Control is responsible for dealing with breakdowns, arranging for the maintenance engineers to go to the trouble spot, and, if necessary, towing the broken-down boat away to one of the repair yards. The firm to which the cargo was consigned is also kept in touch with the position and, if possible, alternative arrange-

ments are made for the transportation of the cargo. An efficient control system is essential and results in the saving of time, labour and cash. The Control of the Leeds and Liverpool Canal is at Wigan. Each Division has its own method of control suited to the peculiarities of the area for which it is responsible. Broadly speaking the system works as a result of close liaison between a team of executives, boatmen, lock keepers and maintenance engineers.



LOADING MACHINERY AT CHURCH KIRK

The Mechanical Handling of Cargoes

It is important that modern mechanical handling equipment should play its part in ensuring a quick turn round with the minimum of labour, time and money at the wharves and docks. However good the control and timing of boats in transit, bottlenecks must be avoided at the loading and unloading points. If craft are delayed at any point the whole system of control is affected and ships awaiting cargo may be delayed at considerable expense.

Methods are now being used to accelerate both the passage time on the canal itself and the loading and unloading of craft. The ingenuity of the designers to adapt equipment to the particular cargoes and conditions has resulted in several appliances which reduce the time and expense factors. There are mobile cranes of every size and shape to deal with cumbersome loads with rapidity, fork lifts which will quickly transfer smaller and more delicate items of merchandise from craft to warehouse, conveyor belts which will take sacks, drums and cases direct from the hold of a barge to the warehouse or factory on the bank.

Development Plans for Inland Waterways

Of the 2,000 odd miles of waterways entrusted to the British Transport Commission, the 1954 Board of Survey suggested that the whole of the system should be divided into three groups as follows :—

Group One

336 miles of the larger efficient waterways should be further de-

veloped and their capacity to earn profit increased.

Group Two

994 miles of waterways which are used to a certain extent mainly comprising narrow canals should be retained.

Group Three

The remainder, some 771 miles, which have insufficient commercial prospects to justify their retention by the British Transport Commission for navigation, should be handed over to other authorities. These authorities include River Boards who require certain canals for drainage purposes or local authorities who could use the waterways for improving local amenities.

The report of the Board of Survey was submitted to the Minister of Transport, who took the view that the widespread interest aroused by the report indicated that there was a need for a further inquiry on a broader basis which would embrace the entire system of inland waterways in this country, including those not in the Commission's ownership, and the wide variety of interests concerned in their future. In February, 1956, he accordingly appointed a Committee for the purpose of carrying out such an inquiry under the chairmanship of Mr. Leslie Bowes, Managing Director of the Pacific Steam Navigation Company. To date this report has not been published.

The British Transport Commission plan to spend some £5,500,000 in developing their principal inland waterways in Group One during the next few years.

This scheme will be mainly concentrated on the 324 miles of the seven wide waterways which carry substantial traffic and offer the greatest scope for commercial development. Only 15 per

cent. of the total mileage of inland waterways is represented by these waterways but, nevertheless, they carry two-thirds of the total traffic.

Estimated Expenditure of Proposed Scheme in Group One

Waterways affected	Mileage	Tonnage passing 1955	Proposed Expenditure
Aire and Calder Navigation	62	2,741,369	£765,000
Sheffield and S. Yorkshire Navigation ...	43	943,611	£614,000
River Trent	69	819,138	£595,000
River Weaver	20	546,987	£387,000
Grand Union Canal (Below Berkhamstead)	57	594,457	£1,396,000
River Lee (Below Enfield Lock)	14	2,435,892	£852,000
River Severn (Including Gloucester-Berkeley Canal)	59	810,264	£891,000
Totals	324	8,891,718	£5,500,000

These particular waterways have shown a progressive increase in traffic tonnage since 1949 and the fleets of the Commission and of private traders on these systems are also being modernised and extended to meet the improvements in the system.

The use of powered craft affects the banks by their heavy wash and, therefore, the greatest outlay would of necessity have to be on protection of the banks and navigation work (£3,345,000). Widening of locks to allow two boats side by side and to remove "bottle-necks" and eliminate delay is estimated

to cost £1,105,000; additional dredging craft and plant that is so vital in keeping the channel clear would cost £636,000, and modernization of bank-side workshops and improvement of other premises a further £414,000.

The scheme does not include plans for improving or extending the Commission's other allied interests such as carrying craft or warehouses.

The 994 miles of waterways in Group Two which the Commission think are worth keeping for transport purposes will have improved maintenance.

Map Showing British Waterways Divisional Organisation



The North Western Division of the British Transport Waterways

The North Western Division is closely connected with the River Mersey and much of its traffic is dependent upon this and particularly on the ports of Liverpool, Birkenhead and Manchester.

The district north of the Mersey includes the coal mining and cotton manufacturing centres of central and south Lancashire, served by the Leeds and Liverpool and the St. Helens Canals and the woollen manufacturing areas of the West Riding of Yorkshire.

The district south of the Mersey

includes the salt and chemical producing areas of mid-Cheshire which are served by the Weaver Navigation, Shropshire Union and the Trent and Mersey Canals. Also included are the coal mining and pottery manufacturing areas of north Staffordshire served by the Trent and Mersey and the Macclesfield Canals.

Apart from these industrial areas and, of course, the great City of Leeds where the Leeds and Liverpool Canal joins with the Aire and Calder navigation, the area of the North Western Division is largely agricultural.

Accrington	Burnley	Leigh	Nelson	Stoke
Armitage	Chester	Liverpool	Northwich	Stone
Ashton	Church	Macclesfield	Rugeley	Warrington
Audlem	Colne	Manchester	Sandbach	Weston Point
Bingley	Ellesmere Port	Market Drayton	Shipley	Widnes
Blackburn	Keighley	Middlewich	Skipton	Wigan
Burton-on-Trent	Leeds	Nantwich	Stafford	Winsford

There are three main waterway routes from Liverpool serving

***LEEDS-HULL AND THE
HUMBER
THE MIDLANDS
THE POTTERIES AND THE
MIDLANDS***

Leeds-Hull and the Humber

The Leeds and Liverpool Canal, connected to the docks at Liverpool

and Birkenhead by means of the Stanley Dock, passes via Wigan, Blackburn, Burnley and Skipton over the Pennine Chain to Leeds where it connects with the Aire and Calder Navigation, and so on to Goole and Hull and the River Humber. At Burscough there is a branch waterway to Tarleton and another at Wigan to Leigh where a connection is made with the Bridgewater Canal and to the Manchester Ship Canal

and the City of Manchester. Thus there is a navigable waterway from the west to the east over the backbone of England.

On this canal, British Waterways operate a fleet of 50-ton diesel-engined barges for carrying general merchandise. For the transport of coal, which forms over 80 per cent. of the total tonnage, the services of independent carriers are used. Some of the collieries are directly connected to the canal and large loads of coal in barges of up to 70 tons capacity travel direct to waterside power stations and industrial users.

One of the special facilities is the direct overside loading and discharging of barges from sea-going vessels at the docks at Liverpool, Manchester and Birkenhead.

Access to the Leeds and Liverpool Canal from the River Mersey is made

by a flight of locks near its terminal in Liverpool.

Liverpool to the Midlands

The Weaver Navigation—Trent & Mersey and Shropshire Union Canals.

The normal route is via Weston Point, Anderton, Middlewich, Nantwich and via the Shropshire Union Canal to Market Drayton and Wolverhampton. From Anderton, the Weaver Navigation continues on to Winsford.

The Weaver Navigation is on the south bank of the Mersey and joins up with two other waterways, the Bridgewater Navigation and the Trent and Mersey Canal, along which boats travel toward the Midlands and Birmingham.

Coasting vessels of 400 tons can go up the Weaver Navigation as far as Northwich in Cheshire and craft of slightly less tonnage can go on as far as Winsford. In this way there is a direct

NARROW BOATS ENTERING THE ANDERTON LIFT WEAVER NAVIGATION



route by canal from the Mersey and the sea to the great industrial areas of Cheshire 35 miles inland.

At Weston Point the Weaver Navigation makes connection with the Manchester Ship Canal and with the Bridgewater Navigation giving a route to Manchester. At Anderton, thirteen miles upstream, access to the Trent and Mersey Canal is obtained by a means unique in this country. The Trent and Mersey Canal is 50 feet above the Weaver Navigation so by an electrically operated lift the boats are raised to their new level to continue their journey on the Trent and Mersey Canal. This gives a direct route to the Potteries in north Staffordshire and the Midlands.

The Weaver has a modern docks system at Weston Point where vessels up to 1,500 tons can be accommodated. There is ample warehouse and storage accommodation and the loading and discharging from sea-going vessels to barges is by means of electrical handling equipment.

From Liverpool to the Potteries

Trent & Mersey and Shropshire Union Canals

The route is the same as for the Midlands along the Weaver Navigation to Anderton and then by the Trent and Mersey via Harecastle to Stoke-on-Trent. South of the Potteries there are junctions at Great Haywood to Wolverhampton by the Staffordshire and Worcestershire Canal, and at Fradley, there is a connection with Coventry leading to the Birmingham Canals.

The Trent and Mersey Canal forms a link between the River Mersey on the north-west coast and the River Trent on the north-east coast. The canal gains

access to the Mersey via the Bridgewater Canal which is joined at Preston Brook. It flows for nearly 100 miles through Cheshire and the North Staffordshire Potteries to Fradley junction then turns east to join the River Trent at Derwent Mouth. The famous Josiah Wedgwood, pottery manufacturer extraordinary, was one of the prime movers in the scheme for building the Trent and Mersey Canal by realising how great an asset such a waterway was to his trade. It entailed great engineering feats including the $1\frac{1}{2}$ mile long Harecastle tunnel. The canal was commenced by James Brindley in 1766 and he died before it was completed in 1777.

For operational purposes the commercial through traffic to the Midlands from Liverpool is routed via the Trent and Mersey Canal as far as Middlewich Junction only. It then proceeds over the Middlewich Branch to join the Shropshire Union on its route southwards.

Subsidiary routes in the North Western Division

It is possible to go from Ellesmere Port via Chester and Nantwich to Wolverhampton by means of the Shropshire Union Canal. This waterway has access to the Mersey at Eastham through its junction with the Manchester Ship Canal at Ellesmere Port west of the points where the Weaver Navigation joins the Ship Canal at Weston Marsh Lock and at Weston Point Docks. By means of a junction at Barbridge near Nantwich it is possible to proceed to Middlewich and the connection with the Trent and Mersey Canal and on to the Weaver Navigation at Anderton which in turn gives access to Weston

Point Docks or on to the Bridgewater Navigation at Preston Brook for the docks at Manchester.

Although the Shropshire Union is used for the transport of many commodities, mainly general merchandise, it is also very popular with pleasure boats owing to the very lovely country through which it passes. This waterway is not the same width for all its length ; north of Nantwich it is a broad canal based upon the old Chester Navigation, but south of Nantwich it narrows. It is thence one of the canals built by Thomas Telford, whose name is usually

Raw products for sugar refineries at Earlestown travel along this waterway. These are conveyed from the docks by overside discharge from sea going vessels. At Widnes, I.C.I. have a large works and make use of the waterway for transporting their finished products to Liverpool. The area between Widnes and Warrington is ripe for industrial development and there are sites available along the length of the canal.

It should be obvious from the foregoing that the various waterways in this Division are connected with a number of independent waterways (those not

BRITISH WATERWAYS HAVING ACCESS TO THE RIVER MERSEY



connected with his engineering feats in road building, and was originally designed to provide a more direct route from the Mersey port of Liverpool to Birmingham.

The St. Helens Canal has a direct link with the Mersey through its locks at Widnes on the north bank of the waterway. This was the original Sankey Brook Navigation and was the first distinct artificial canal (as apart from canalised rivers) to be built in England at the beginning of the industrial Revolution. It now finishes at Earlestown.

under the control of the British Transport Commission) at :—

Ellesmere Port	Manchester
Weston Point Docks	Ship Canal
Leigh	Bridgewater Canal
Preston Brook	
Runcorn	

Places with Warehouse and Storage Accommodation in the North Western Division

Anderton	Keighley
Blackburn	Nelson
Burnley	Shipley
Church	Weston Point Docks
Ellesmere Port	Wigan

Maximum Dimensions of Craft Capable of Navigating the Waterways

	Length	Beam	Draught	Headroom	Capacity
		(all measurements in ft.)			(tons)
LEEDS & LIVERPOOL CANAL					
Liverpool Arm	72	14	5	8	80
Liverpool-Wigan-Leigh ...	72	14	4	8	60
Wigan to Leeds	62	14	4	8	50
ST. HELENS CANAL	75	16	5	11	120
ASHTON PEAK FOREST	70	7	3	6	25
MACCLESFIELD	70	7	3	7	25
TRENT & MERSEY CANAL					
Preston Brook to Anderton ...	70	7	4	8	25
Anderton to Lostock	70	14	5	8	50
Lostock to Burton-on-Trent .	70	7	4	7	25
WEAVER NAVIGATION					
Weston to Northwich	150	36	10	60	400
Northwich to Winsford	130	36	10	30	350
SHROPSHIRE UNION CANAL					
Ellesmere Port to Chester ...	70	14	4	8	60
Chester to Nantwich	70	13	3	8	50
Nantwich to Autherley	70	7	3	8	25
Nantwich to Middlewich	70	7	3	8	25
STAFFS. & WORCESTERSHIRE CANAL					
... ..	70	7	3	7	25

Map Showing Leeds and Liverpool Canal and Aire and Calder Navigation Linking Coast to Coast



THE LEEDS AND LIVERPOOL CANAL

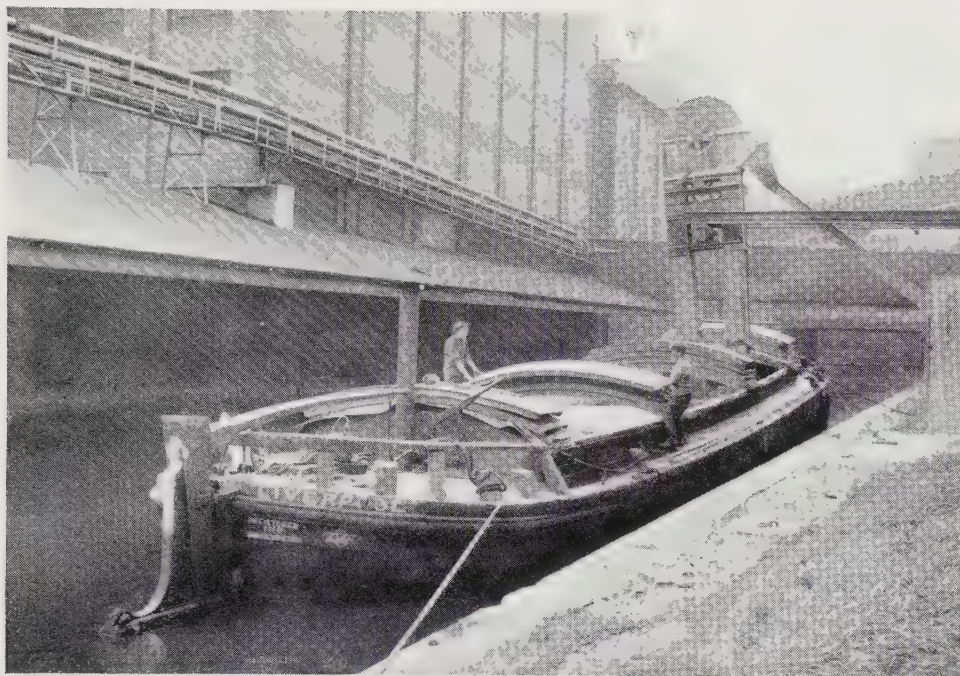
The Leeds and Liverpool Canal is today, as it has done for the last 180 years, providing a useful service as part of the country's transport system.

The work on the Liverpool end of the Canal was commenced in 1770, its purpose being to join the Aire and Calder Navigation at Leeds to Liverpool, and to serve the traffic needs of the expanding towns on its route. The line was surveyed by John Longbotham, a Yorkshireman and pupil of Smeaton's, and was planned to be $108\frac{3}{4}$ miles long. On the Yorkshire side this line was in fact followed, but in Lancashire Longbotham's line ran below Burnley and Blackburn and thence by Leyland to

Newburgh to join the present route to Liverpool. At Newburgh there was to be a connection with the navigable river Douglas, down which coal was carried from Wigan to the sea at Tarleton for carriage to Liverpool and Ireland. Under Brindley the route was re-surveyed and cuttings began as one link in the imaginative and far reaching scheme of linking the four great river estuaries of the Humber, Severn, Thames and Mersey and their associated ports. Brindley died on September 27th, 1772, and, therefore, did not see the completion of his work. The Leeds and Liverpool Canal project proved to be the most difficult of all canal engin-



A GRAIN BARGE ON THE LEEDS AND LIVERPOOL CANAL



GRAIN ELEVATOR AT LIVERPOOL

engineering problems up to that time and involved a cut of over 120 miles including numerous locks.

By 1777 over 30 miles had been built on the Yorkshire side from Leeds to Gargrave, and 28 miles in Lancashire from Liverpool to Newburgh to join the Douglas. Owing, however, to a movement in Liverpool and Wigan to build a shorter canal between the two towns, the canal company also bought the river navigation, built a branch canal from Newburgh to Wigan alongside it, and also a branch to Tarleton.

Building now stopped till 1790, when with Robert Whitworth as engineer the 14 miles from Gargrave to Barrowford, including the 1,640-yard long Foulridge tunnel on the summit level of 487 feet, were built. From Barrowford it was

extended to Burnley in 1796, and Blackburn in 1810. Finally, the canal was opened in October, 1816, to Johnson's Hillock, where it joined the Lancaster Canal, over which company's line craft passed to Wigan to rejoin the rest of the canal at Wigan top lock. This section of the Lancaster Canal was taken over by the Leeds and Liverpool company in 1864.

This great Leeds and Liverpool Canal over the Pennines had taken forty-six years to build and had altogether cost about £1,200,000. As finished, it was $127\frac{1}{2}$ miles long, including the Lancaster Canal section, with a $7\frac{1}{4}$ mile branch to Tarleton. In 1821 another branch, also $7\frac{1}{4}$ miles long, was opened to join the Duke of Bridgewater's Canal at Leigh, and in 1846 a



GRAB WORKING AT TATE AND LYLE'S
SUGAR FACTORY — LIVERPOOL

UNLOADING COAL AT WIGAN POWER
STATION

physical connection was made at Liverpool with the Mersey and the whole line of docks on both sides of the river. These locks will pass river barges 72 ft. long, 14 ft. in the beam and a draught of 5 ft. From Liverpool to Wigan the 72 ft. boats can pass through the Locks, but from Wigan to Leeds "short" boats of 62 ft. length with a loading capacity of approximately 50 tons are operated.

The influence of the railways is seen by the fact that although the Act of 1845 enabled the Leeds and Liverpool Canal Company to carry goods and to encourage traffic by varying or leasing their rights to exact tolls, a group of railway companies in 1853 obtained a 21 year lease of the merchandise traffic on the canal. For some years thereafter all three trans-Pennine canals were railway controlled, but in 1874 the lease was not renewed and the canals were and remained independent.

The canal lost its independent



management as a statutory company on the 1st January, 1948, by being vested in the Docks and Inland Waterways Executive now known as the British Waterways Division of the British Transport Commission. During 1948, in company with the Weaver Navigation, the St. Helens Canal, the Shropshire Union Canal, the Trent and Mersey Canal and other waterways, it became merged into what is now the North

Western Division of the British Waterways.

North Western Division — Divisional Office

*Lime Street Chambers, Liverpool, 1.
Telephone : Liverpool Royal 7030.*

*Divisional Manager, C. M. Marsh,
M.Inst.C.E.*

*Divisional Traffic Officer: A. C. Lisle.
O.B.E., M.Inst.T.*

MAXIMUM DIMENSIONS OF CRAFT CAPABLE OF NAVIGATING THE LEEDS AND LIVERPOOL CANAL

		<i>Length</i>	<i>Beam</i>	<i>Draught</i>	<i>Headroom</i>	<i>Capacity (tons)</i>
Liverpool Arm ...		72 ft.	14 ft.	5 ft.	8 ft.	80
Liverpool to Wigan and Leigh ...	...	72 ft.	14 ft.	4 ft.	8 ft.	60
Wigan to Leeds ...	...	62 ft.	14 ft.	4 ft.	8 ft.	50

Transport of Goods

Since nationalization the transport of merchandise on the system has been largely undertaken by the British Waterways carrying fleet, whilst bye-traders or barge owners who are concerned principally with the carriage of coal pay tolls to British Waterways for the use of the canal. Traffic on the canal consists of :—

- (a) The British Waterways carrying fleet.
- (b) The barges operated by bye-traders or general carriers on hire.
- (c) Trader's own craft.

The canal offers facilities for the overside delivery from ship into barge at the docks on both sides of the Mersey, whilst coal can be loaded direct to barges from Collieries in the

south Yorkshire area and at Burnley, Wigan and Leigh, from which points deliveries are made direct to works, mills and power stations adjoining the canal system.

Approximately one million tons of traffic normally passes over the canal each year and of this total 80 per cent. is coal, the remainder consisting of grain, flour, sugar, wool, cotton, timber, soap-making material, lead, stone, chemicals, cement, etc.

Boat Building and Repairing Yards

There are seven boat building and repairing yards on the canal :

Messrs. John Parke & Sons, Ltd., 23,
Syren Street, Liverpool.

Messrs. James Mayor & Co., Swan
Meadow Road, Wigan.

British Waterways repair yard, Pottery Road, Wigan.



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in electrical engineering development*

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Close liaison between the companies of the Driver-Harris world-wide organisation is a very real and active policy. It continues to yield an impressive dividend of technical progress.

The liaison is expressed in regular communication and exchange of visits between technologists, a pooling of knowledge on every fresh aspect of wire-drawing technique, and continuous research along parallel lines between the laboratories and manufacturing plants in the United Kingdom, United States, Eire, France, Italy, Austria and Spain.

The result of that collaboration is a succession of advances in the production of nickel-alloy resistance materials of profound importance to all development in the electrical engineering world.

BRITISH DRIVER-HARRIS CO. LTD. MANCHESTER 15



"The greatest name in electrical resistance materials"

Messrs. J. & J. Crooke Riley Green.
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Blackburn.

Messrs. Hainsworth, Bingley—Pleasure Craft.

Messrs. William Rider & Co., Steam
Sawmills, Canal Wharf, Leeds, 11.

British Waterways Local Traffic Offices

Shipley : Wharf Street, Shipley 52479

Keighley : Bar Lane, Riddlesden,
Keighley 2893.

Church : Library Street, Accrington
2221.

Blackburn : Eanam, Blackburn
4103/4.

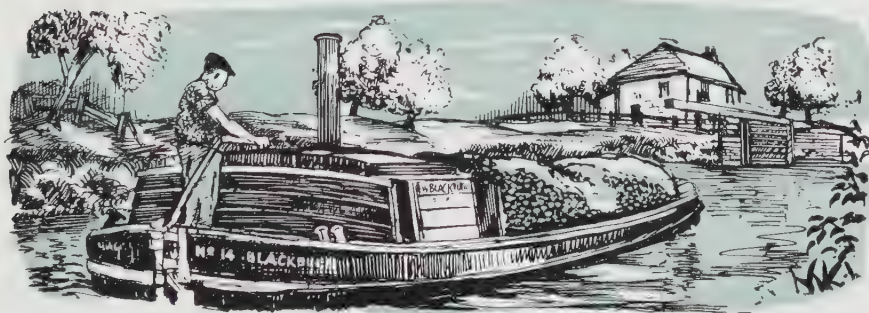
Wigan : Wallgate, Wigan 3097/
45396.

Liverpool : Top Lock, Lightbody
Street, Liverpool Worth 2449.

Manchester : No. 8 Dock, Salford
Docks, Salford, Trafford Park
0507.

Inland Waterways have been given a new lease of life to show that they can play a not inconsiderable part in relieving the congestion of road transport and dealing with bulky and heavy loads. Transport by inland waterway is specially suitable and efficient for :—

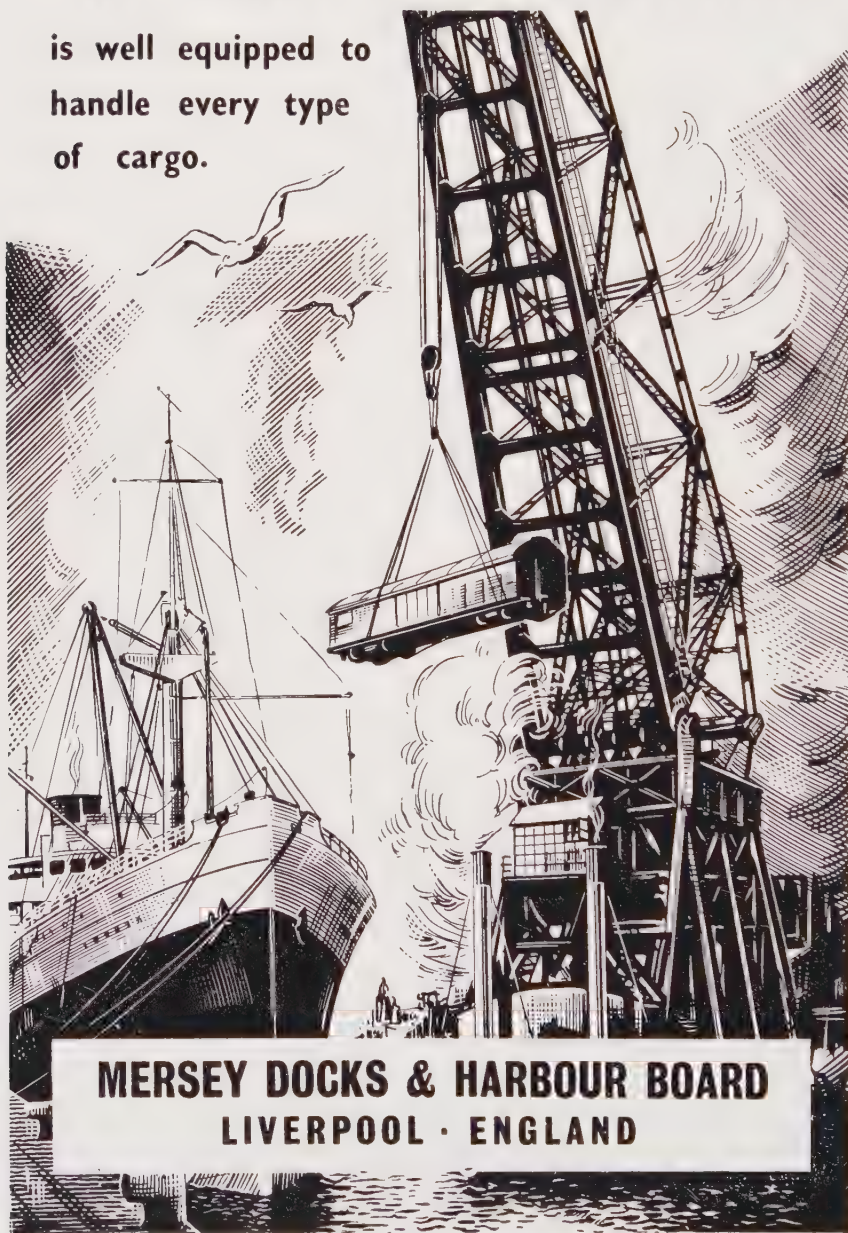
- (a) Traffic imported or for shipment in the ports connected with the inland waterway system, particularly in those instances where overside delivery from ship to barge, or vice versa, takes place.
- b. Traffic which can be carried from point to point in barge loads.
- c. Traffic conveyed to or from waterside premises.
- d. Petroleum and liquids in bulk.
- e. Traffic requiring bulk movement and storage in canal-side warehouses.
- f. Trunk haul to river or canal waterheads with subsequent delivery by road.





THE PORT OF LIVERPOOL

is well equipped to
handle every type
of cargo.



MERSEY DOCKS & HARBOUR BOARD
LIVERPOOL · ENGLAND



Leeds and Liverpool Canal

INDUSTRIAL DEVELOPMENTS

WITH ACKNOWLEDGEMENTS TO THE BOARD OF TRADE

The Canal flows through three industrial development areas and many of the local authorities on the route have a very close interest in attracting new industries into their areas. Since 1945 the Board of Trade has been responsible for carrying out national distribution of industry policy and can, together with the other departments concerned, provide detailed information about industrial location and allied matters for industrialists planning expansion. Location Rooms containing maps and charts, photographs and other useful details may be visited at the Board's headquarters and in their Regional Offices.

Regional Offices of the Board of Trade are set out only as they affect the regions through which the canal flows.

- a. North Eastern Region, Pearl Chambers, East Parade, Leeds, 1.
- b. North Western Region, 76, Newton Street, Manchester, 1.

Within the development areas there are large and growing industrial estates

and the address of the offices of the South Lancashire, North-East Lancashire and Merseyside Development Area is :—

North-Western Industrial Estates, Ltd., Derby House (8th floor), Exchange Buildings, Chapel Street, Liverpool, 2.

Also within the areas are development associations or committees and those for their own areas are :—

- a. Lancashire and Merseyside Industrial Development Association Director, G. S. F. Ritson, T.D., M.A., Cleveland Buildings, 94, Market Street, Manchester, 1.
- b. North-East Lancashire Development Committee, Hon. Secretary, C. V. Thornley, M.A. (Town Clerk, Burnley), Town Hall, Burnley, Lancashire.

Another source of information concerning the districts within the development areas are the official guides issued by the local authorities. Usually these

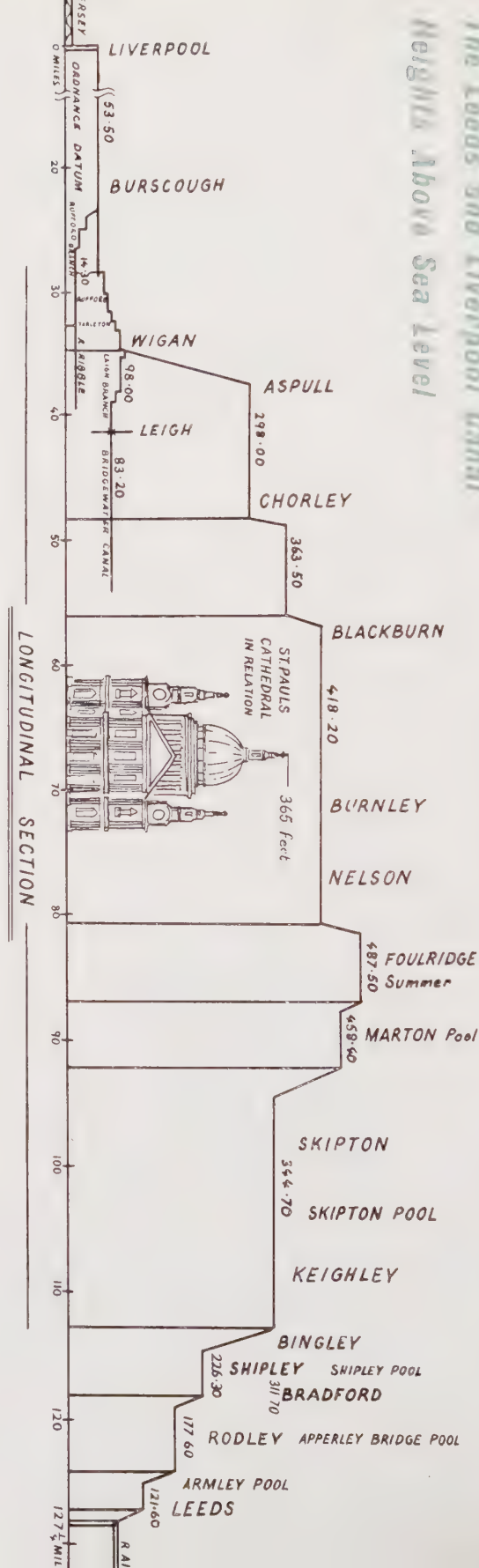
may be had for the writing or for a nominal payment of a shilling or so. Local authorities are also useful in connection with town planning information, housing conditions, sewerage facilities, and a multitude of other tasks that fall to their lot but which are essential auxiliaries to the running of a modern efficient factory.

Adequate sites are available and well situated for all types of industrial purposes, the necessary electricity, gas and water supplies are adequate, and in fact a great deal of water is sold from the Leeds and Liverpool Canal.

Owing to the excellent transport facilities by road, rail, canal, sea and air, speedy services can be obtained to all parts of the country. Goods of any size and quantity can be handled rapidly and efficiently, and in nearby Manchester there is a major airport. The manufacturer and distributor should not overlook the very large local market that exists for all types of goods and the fact that through Liverpool, Manchester, Preston and their Dock systems are invaluable export outlets to all parts of the world.

As would be expected in an area of major commercial and industrial importance, the Banking, Insurance and Commercial Houses specialise in dealing with industry and are ready to help and advise. Special efforts have been made to effect a close liaison between advancement and its practical application on the floor of the workshop. Furthermore, there may be found in the area through which the Leeds and Liverpool Canal runs, a large existing and potential labour force.

Eighty-eight



THE LEEDS AND LIVERPOOL CANAL

A Detailed Itinerary in Six Stages

STAGE ONE	...	Liverpool to Wigan and the Leigh Arm.
	<i>Section One</i>	... Liverpool to Litherland.
	<i>Section Two</i>	... Litherland to Burscough.
	<i>Section Three</i>	... Burscough to Wigan.
	<i>Section Four</i>	... The City of Wigan.
	<i>Section Five</i>	... From Wigan to Leigh.
STAGE TWO	...	Wigan to Blackburn.
	<i>Section One</i>	... Wigan to Chorley.
	<i>Section Two</i>	... Chorley.
	<i>Section Three</i>	... Chorley to Blackburn.
	<i>Section Four</i>	... Blackburn.
STAGE THREE	...	Blackburn to Burnley.
STAGE FOUR	...	Burnley to Nelson.
STAGE FIVE	...	Nelson to Skipton.
STAGE SIX	...	Skipton to Leeds.
	<i>Section One</i>	... Skipton to Bingley.
	<i>Section Two</i>	... Bingley to Leeds.

Special Note :—Where the Canal passes through towns or built up industrial areas the scale is $3\frac{1}{4}$ " to a mile. Where the Canal passes through long stretches of open country the map is not to scale.

The Itinerary and Sectional Plans of Stage One

POINT OF ORIGIN TO LEIGH IN FIVE SECTIONS

<i>Section One</i>	...	Liverpool Terminal Point to Litherland.
<i>Section Two</i>	...	Litherland to Burscough.
<i>Section Three</i>	...	Burscough to Wigan.
<i>Section Four</i>	...	The City of Wigan.
<i>Section Five</i>	...	The Leigh Arm from Wigan to Leigh.

Stage distance : 37 statute miles from point of origin to Top Lock, Aspull, Wigan.

The point of origin for distances and levels is at the left hand corner of the end of the basin at Pall Mall, Liverpool. The itinerary proceeds up the canal to the junction with the Aire and Calder at Leeds.

STAGE ONE — SECTION ONE

The Point of Origin—Pall Mall to Litherland

Section One distance : 5 miles.

Bridges : 18.

Locks : 4, between Canal and Stanley Dock.

Wharves and Warehouses : Numerous, both banks.

Total distance from point of origin : 5 miles.

The City and Port of Liverpool

Liverpool, by virtue of its position on the wide estuary of the River Mersey, has always been a seaport, and was granted its first Charter in 1207 by King John. The City is said to take its name from the great pool in which lived the ancient waterfowl called Liver, a species of cormorant, now extinct. It is, of course, the largest City in Lancashire, with a population of 780,000 and now has the status of a City.

In 1715 the merchants of Liverpool created the first enclosed commercial dock, and from this has grown the great modern seaport and City. The quays of Liverpool are on the east bank of the Mersey and opposite is the companion port of Birkenhead with its great ship-building and repairing yards. The traffic in canal craft from Birkenhead consigned for the Liverpool to Leeds Canal crosses the Mersey and enters the waterway at Stanley Dock.

The City and Docks of Liverpool are connected for land transport to Birkenhead by the famous Mersey Tunnel, which has four traffic lines for all types of motor vehicles and two exits and entrances at each end, one serving the docks and the other the town centres and is used by seven million vehicles each year. It cost eight million pounds to build and was opened in July, 1934.

The Port of Liverpool, which includes Birkenhead, handles the turn round of more than 32,000 vessels of all classes every year. It caters for every type of ship from giant modern Atlantic liners to small coasters. This entails the loading and discharging of 15,000,000 tons of merchandise annually. The Port handles the major proportion of the products of the export of the great industrial areas of Lancashire, and conversely deals with the imported raw materials and food-stuffs. There are seven miles of quays and in Liverpool and Bootle a water acreage of 460. In Birkenhead there are four miles of quays and 181 acres of water space. To keep all these waterways clear of sand and silt the dredgers have to remove over ten million tons each year.

The Port is under the control and jurisdiction of the Port Authority — The Mersey Docks and Harbour Board — which was constituted by Act of Parliament in 1857. The Board is responsible for maintenance and development both of the Port and its entrance channels, docks and river and light houses. At all quays there are facilities for overside cargo handling direct into, or out of, canal craft of all classes.

The Port Authority is now engaged on a £16,000,000 development and reconstruction scheme to repair the

enormous damage caused when Liverpool was a major target for the Luftwaffe, and in the near future the amount of ship traffic and cargoes handled will be greatly expanded.

Liverpool is by no means only a seaport. For 300 years it has been an industrial area and apart from ship building and the ancillary industries nearly every form of light industry is represented to-day. The City has always been a centre for sugar refining from the cargoes imported from the West Indies, and for the processing of raw materials and foodstuffs from the western continents.

The City of Liverpool is the focal point of all rail, road and waterways services which cover the north west region of England and lead through the Midlands to London.

Useful Information about Liverpool

There are several places of historical interest to see when in Liverpool and district, but certainly Speke Hall should

not be missed. It is owned by the National Trust and administered by Liverpool Corporation. It is a richly timbered house dating from 1530-1598 and is situated 8 miles South-East of Liverpool. It is open daily, including Sundays and Bank Holidays, but is closed Good Friday and Christmas Day.

Mersey Docks and Harbour Board

Pierhead, Liverpool. Central 6010.

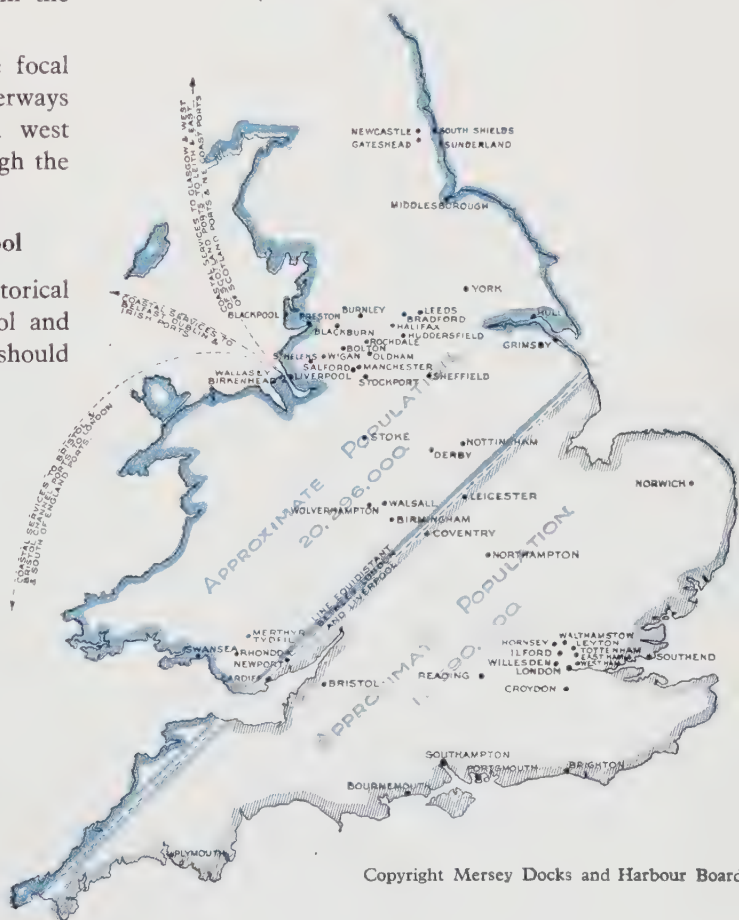
Chamber of Commerce

Lt. Col. P. G. R. Burford, T.D., M.A.,
1, Old Hall Street, Liverpool, 3.

Chamber of Trade

11, Dale Street, Liverpool, 2.

MAP SHOWING RELATION OF
LIVERPOOL TO TOWNS AND
CITIES OF POPULATION 100,000
OR OVER



Copyright Mersey Docks and Harbour Board

North Western Industrial Estates Ltd.

Derby House, Exchange Building,
Chapel Street, Liverpool, 2.
Central 7005.

Customs and Excise Office

R. B. Cunningham, Esq., O.B.E.,
Custom House, Cunard Building,
Liverpool, 3.

Federation of British Industries Office

Thos. E. Payne, Esq.,
India Buildings, Liverpool, 2.

Trading Estates

City Engineer and Surveyor,
Municipal Buildings, Dale Street,
Liverpool, 2.

British Road Services

F. Lever, Esq.,
Lime Street Chambers, Lime Street,
Liverpool, 1.

Road Haulage Association

The Secretary,
20, Chapel Street, Liverpool, 3.

Factory Inspector

C. P. Gourley, Esq.,
Supt. Inspection for N.W. Division,
West Africa House, 7th Floor,
25, Water Street, Liverpool, 3.

Board of Trade Local Office

W. H. Hodgkinson, Esq.,
Board of Trade,
Derby House, Liverpool, 2.

Information Bureau

R. Millington, Esq., Information Officer,
Municipal Buildings, Dale Street,
Liverpool, 2.

or

Citizens Advice Bureau,
34, Stanley Street, Liverpool, 1.

Ministry of Labour and National Service

A. Cameron, Esq., Manager,
Ministry of Labour and National
Service,
Leece Street, Liverpool, 1.

British Railways

M. G. E. Lambert, Esq.,
Divisional Traffic Manager,
T. C. Byrom, Esq., M.B.E.,
District Passenger Manager,
Lime Street Chambers, Lime Street,
Liverpool, 1,
and

H. A. Mugliston,
District Goods Manager,
Exchange Chambers, Bixteth Street,
Liverpool, 3.

Hotels and Boarding Houses :

Adelphi Hotel, Ranelagh Place. Tel.: Royal
7200.

Alexandra Court Hotel, Alexandra Drive.
Tel.: Lark Lane 2551.

Alva Private Hotel, Thomas Lane, Broad-
green. Tel.: Stoneycroft 9066.

Antrim Hotel, 73, Mount Pleasant. Tel.:
Royal 5239.

Blundellsands Hotel. Tel.: Great Crosby
3883.

Bradford Hotel, Tithebarn Street. Tel.:
Central 8782.

Exchange Hotel, Tithebarn Street. Tel.:
Central 5687.

Guest Hotel, 7, Gambies Terrace, Hope
Street. Tel.: Royal 1974.

Hanover Hotel, 62, Hanover Street. Tel.:
Royal 4333.

Imperial Hotel, Lime Street. Tel.: Royal
7391.

Lord Nelson, Lord Nelson Street. Tel.:
Central 8567.

Princess Gate Hotel, Princess Gate West.
Tel.: LAR 067.

Royal Hotel, Bath Street. Tel.: Waterloo
3576.

Sampson and Barlow's Hotel, London Road.
Tel.: North 0753.

Stork Hotel. Tel.: Royal 1231.

Restaurants :

Basnett Bar, Basnett Street. Tel.: Royal
1913.

Bear's Paw Restaurant, 59, Lord Street.
Tel.: Central 8567.

Corn Market Restaurant, Old Ropery, Fen-
wich Street. Tel.: Central 2131.

Far East Restaurant, 19, Great George
Square. Tel.: Royal 3861.

Lucullus Restaurant, Sefton House, Ex-
change Street, East. Tel.: Central 5249.

Reece's Grill Room, Parker Street. Tel.:
Royal 9051.

Royal Restaurant, Hanover Street. Tel.:
Royal 5745 and 3046.

STAGE ONE

LIVERPOOL TO WIGAN

SECTION ONE

Point of Origin to Litherland

The canal originated in a basin at Vauxhall Road at a point by the junction of Leeds Street in the City of Liverpool, but the terminal basin 220 yards long has been filled in. The canal now commences behind Pall Mall and follows a northerly course, with factories, warehouses and wharves on both banks. The water level is 53 feet above mean sea level.

At 6 furlongs on left bank is the entrance to Liverpool Locks (see plan). These four locks take the canal down to 20 feet above mean sea level into the Stanley Dock and the River Mersey. These locks form the entrance and exit for all canal vessels working in and out of the Liverpool docks from anywhere on the River Mersey.

Shortly after passing under Lighybody Street Bridge, the canal skirts the Athol Street Gas Works, one of the important gas producing plants, supplying the City of Liverpool. The coal supplies are conveyed to the works by canal barge from which the fuel is grabbed direct into the works.

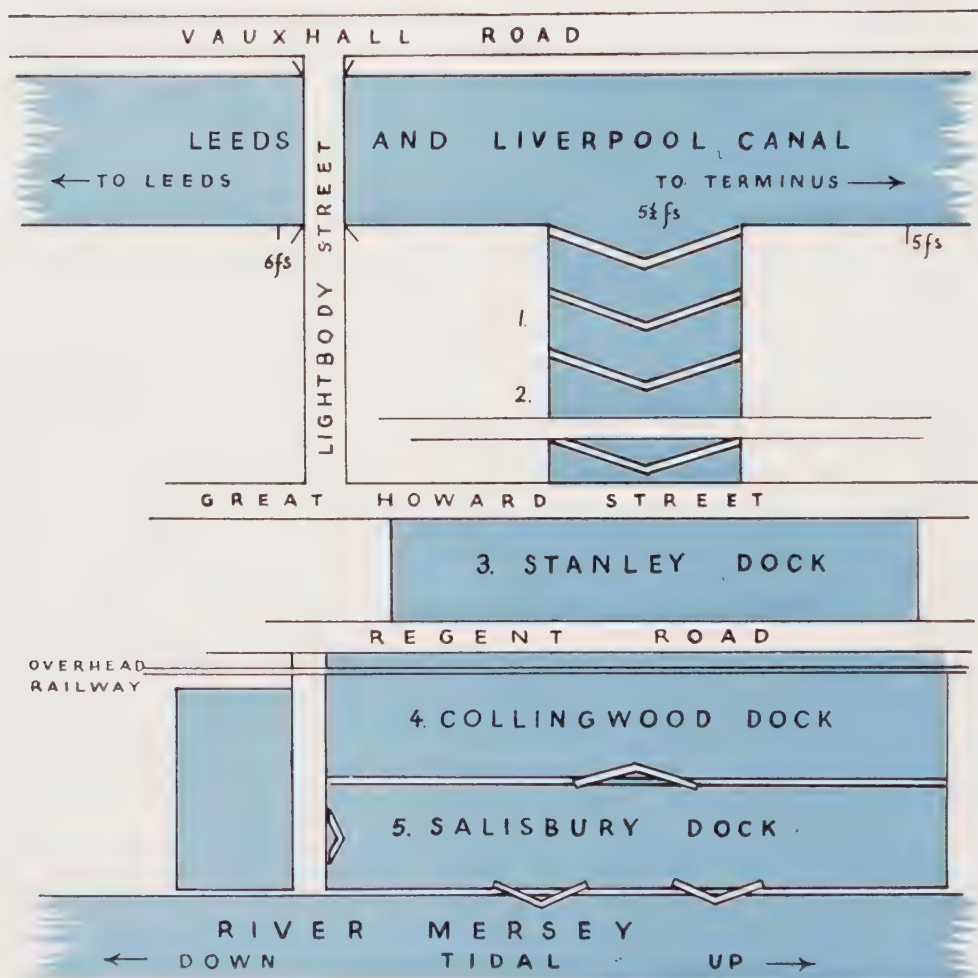
The canal continues to run parallel to Vauxhall Road and Commercial Road on the right, and Great Howard Street and Derby Road on the left. The tow path is on the left bank. On the left bank north of boundary at mile 1 is the British Railways Goods Depot and wharves, which embraces the Sandhills Coal Tips. Here the coal from the Lancashire and Yorkshire Pits is received in special rail wagons and transhipped direct to canal barge for delivery to the canal connected works and refineries in the Liverpool area.

There are wharves and warehouses on both banks. At 2 furlongs above Bankhall Street Bridge the canal enters the County Borough of Bootle. It is flanked on both banks by factories and warehouses, and runs between the main line railway from Exchange Station, Liverpool, on the right, and Derby Road on the left, beyond which lies the great Bootle dock system.



Liverpool Locks

ENTRANCE TO STANLEY DOCK



Bootle

The canal enters the County Borough of Bootle at $2\frac{1}{4}$ miles from the point of origin in Liverpool and serves as an artery for the transport of merchandise from the important dock and industrial areas in Bootle, which is mistakenly thought to be part of Liverpool.

Within the jurisdiction of the County Borough of Bootle are modern docks extending for some $1\frac{1}{2}$ miles and handling the largest vessels entering the Port. The Gladstone system opened in 1927 is the most important. Bootle was a primary target for the Luftwaffe during the last war ; like Liverpool it was one end of the Atlantic lifeline.

The population of Bootle is 78,000, having grown in a century and a half from a tiny village of less than 1,000 souls, the majority of whom are employed in the wide variety of industrial interests in the rapidly developing County Borough. The industries are primarily connected with shipping and shipbuilding and warehouses, but many new industries are now being attracted to the Industrial Estates being developed and expanded at Dunnings Bridge, and adjacent to Ford Railway Station, both of which sites are conveniently adjacent to the canal.

Bootle Chamber of Commerce, 187, Stanley Road,
Bootle.

British Railways, Alexandra Dock Goods Depot,
Bootle.

Ministry of Labour and National Service, Christ
Church Hall, Breeze Hill, Bootle.

Windham Hotel, Oriel Road.

At mile $2\frac{3}{4}$ at Coffee House Bridge, the canal turns north-west and at mile 3, 3 furlongs on left are the Linacre Gas Works, where a turn is made to N.N.E. with wharves and works on both banks. Two furlongs before the railway bridge at mile 4, the waterway leaves Bootle and enters Litherland.

Population 24,140.

The district is situated five miles north-west of Liverpool. Water is supplied by the Liverpool Corporation. Motor bus services operated by the Liverpool Corporation and Ribble Motor Services Limited serve the district. Areas covering 32 acres of allotments are administered by two allotment associations, and 37 acres of land comprise Council recreation grounds.

1/4
1/2
3/4
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7 3/4
8
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8 1/2
8 3/4
9
9 1/4
9 1/2
9 3/4
10

Millers
Coffee House
Railway
Stanley Road
Litherland Road
Linacre Gas Works
Marsh Lane
Linacre Road
END OF BOOTLE
ENTER
LITHERLAND
Railway
LITHERLAND LIFT
Litherland
END OF
LITHERLAND

STAGE ONE — SECTION TWO

LITHERLAND TO BURSCOUGH

Section Distance : 20 miles.

Bridges : 45.

Locks : None.

After the swing bridge at Ford at mile 5½ the canal turns from a northerly to an easterly course which it pursues until mile 8 as it makes the loop round the Aintree Race Course, which it passes on the south side of the waterway.

Aintree—Home of the Grand National Steeplechase

It is not possible now to see either the canal from the racecourse or vice versa, as circumstances forced the owners to enclose the course in 1951/52. The reason for this was that during meetings not only did horses occasionally run out of the race and fall in, but that between meetings much trespass and damage used to take place. One does, however, pass under the bridge that leads to the steeplechase entrance which can be seen as you pass by.

The film contract for the Grand National Steeplechase is worth many thousands of pounds, and in the old days before it was taken up by the syndicate, much competition and piracy used to take place in an effort to obtain the film. In one instance when one firm had obtained it, another was successful in getting many shots from a barge laden with hay going slowly down the canal, with a heated cameraman working frantically inside the hay bundle to take shots of the race in progress as it passed along the canal side. One of the famous points in the Chase is known as the Canal Turn.

If one looks back further to the days when the moor was not enclosed and a great deal of welshing took place in the country, tales tell of book-makers being caught by the crowd and being ducked in the canal and only being rescued in time by the police.

None of the old barges can take their place now along the canal side, although there are one or two privileged ones that are allowed on this site from year to year.

(With acknowledgements of M. D. Topham, Secretary, Tophams Limited.)

At Ledsom's Bridge at Melling 10½ miles it turns to the north and runs in close proximity to the main road A.567 from Liverpool to Southport.

The small township of Maghull is passed at mile 12. There is an entry in the Maghull Parish records :—"1827. Packet fare from Maghull to Wigan of a sick woman 1s. 10d.

Burscough is a small market town with corn mills and interests in agricultural machinery, and has some factories for light industry. Adjacent to the Railway Bridge is the important flour mill of Messrs. H. and R. Ainscough Ltd., to which large tonnages of grain are conveyed by canal barge from the docks in Liverpool and Birkenhead.



STAGE ONE — SECTION THREE

BURSCOUGH BRIDGE TO CROOKE BRIDGE, WIGAN

Section Distance : 8 miles 2 furlongs.

Bridges : 16 : Burscough Railway 24 miles 2 furlongs, Glovers Swing 24 miles 6 furlongs, Ring O' Bells 25 miles 2 furlongs, Moss 25 miles 4 furlongs, River Tawd (aqueduct) 25 miles 6 furlongs, Spencer's 26 miles, River Douglas (aqueduct) 27 miles, Parbold 27 miles 4 furlongs, Alder Lane 27 miles 6 furlongs, Chapel House 28 miles, Gillibrand 28 miles 6 furlongs, Appley 29 miles 6 furlongs, Finch Hill 30 miles, Rennicars 30 miles 2 furlongs, Gathurst 31 miles 4 furlongs, Crookes 32 miles 2 furlongs. Many are humped backed and several are turn bridges.

Locks : 2 : Appley at mile 29.2 furlongs, Dean at mile 31 2 furlongs.

Wharves : Occasional. **Wharehouses :** Nil.

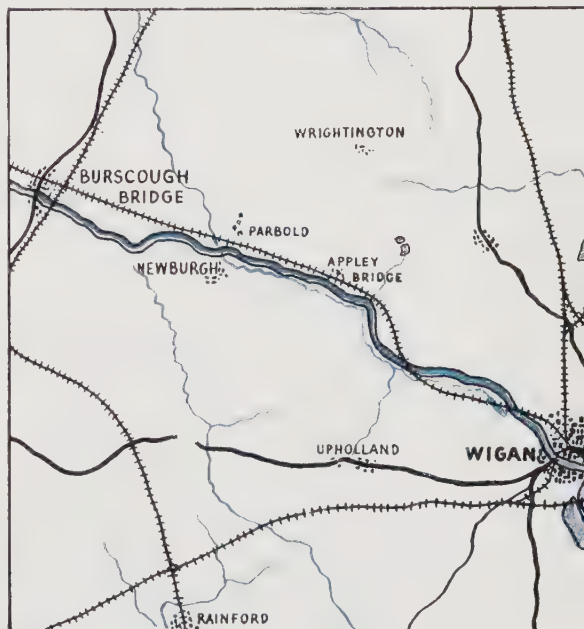
Total Distance : 32 miles 2 furlongs.

From Burscough Bridge to Wigan the general direction of the course of the canal is E.S.E. Six furlongs above Burscough Bridge on the left bank the Rufford Arm of the canal branches off to the north. From this point the waterway very closely follows and in fact in many places is actually alongside the main railway line from Southport to Wigan, passing through open and agricultural countryside. At mile 27 an aqueduct carries the canal over the River Douglas which then turns and runs alongside the canal into Wigan.

In the period when the canal was constructed Wigan was a mining community, and with the introduction of modern coal mining methods the Wigan coalfields make a valuable contribution to the national output and much of it is carried by canal.

The primary industries are cotton and engineering, and in the development of recent years, encouraged by the careful planning of the Municipal Authority, a comprehensive variety of factories for light industries such as clothing, celanese production, furniture, footwear, hosiery and foodstuffs have been erected and are now operating. The Lamberhead Trading Estate of about 40 acres, which is on the Ormskirk Road one mile east of the point where the canal crosses this road, is being developed for factory sites and the estate will eventually hold about 600,000 square feet of factory space. Details of this can be obtained from the Town Clerk of Wigan.

At mile 29.2 furlongs is the first lock in this long open pound from Liverpool—Appley Lock. On the left bank is the village and the railway station. Considerable housing development has taken place in the Parish of Shevington and the Wigan Rural District Council's main sewer was laid underneath the canal at Gathurst at considerable expense. Hereabouts Shevington Coal Staithe will be observed on the left bank of the Canal. Coal from several pits in the vicinity is conveyed in rail wagons to this canal tip, where it is loaded on to barge for on-carriage to Liverpool for industrial consumption.



At mile 31.2 furlongs is Dean Lock and at mile 32 the canal enters the commencement of the built-up area of Wigan at Crooke Bridge.

Useful Information about Wigan

Wigan Rowing Club, Basin Lane, Haigh.

British Railways, North-Western Station. Wigan 2231.

Wallgate Station. Wigan 2231.

Station Road. Wigan 2337.

Goods Yard at Chapel Lane,
North-Western Station and
Darlington Street. Wigan
2231.

Chamber of Commerce, 15, King Street. Wigan 2361.

Chamber of Trade, Clarence Chambers, 46, Wallgate. Wigan 44372.

Customs and Excise, County Court Buildings,
Crawford Street. Wigan 3628.

Ministry of Labour and National Service, Dorning Street. Wigan 44214.

Inspector of Factories, College Chambers, King Street. Wigan 2154.

HOTELS

Grand Hotel, Dorning Street. Tel. 3471.

Victoria Hotel, Wallgate. Tel. 270611.

The transport services are excellent :—

By Rail : There are three passenger stations, namely, North Western Station, Wallgate, on the main line from London to Glasgow, The West Country and Wales, Wallgate Station, Wallgate, on the main line to Bolton, Manchester, Southport and Liverpool, and Station Road Station for the local line to St. Helens and Manchester.

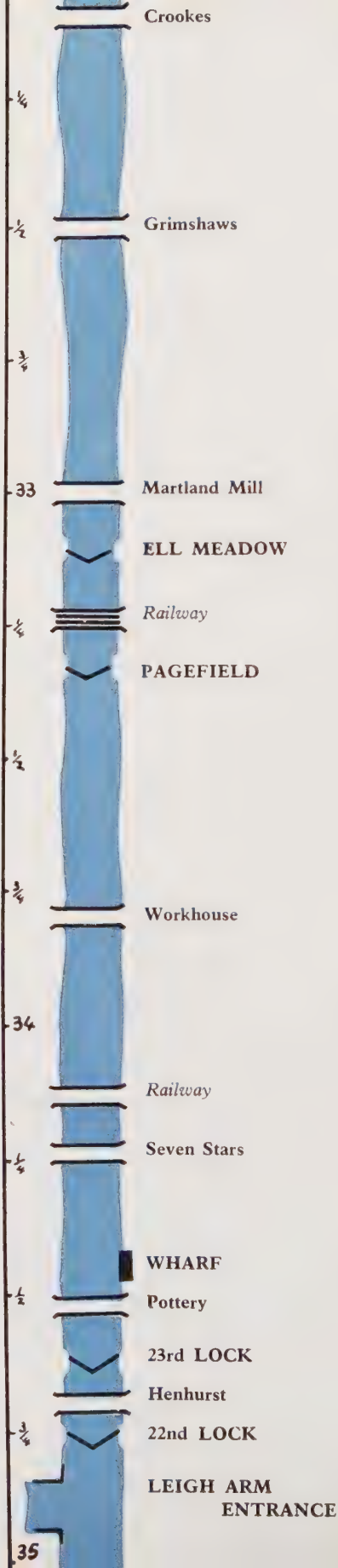
There are extensive goods depots at Chapel Lane, Darlington Street East and North Western Station.

By Road : Wigan is connected to the adjacent towns by excellent bus and coach services operated by Ribble Motor Services and Lancashire United Transport Co. There are also many private coach operators. The Corporation Transport Department operates a service in the Borough.

The Bus Station is in Market Square.

By Waterways : The Leeds and Liverpool Canal provides service for waterborne traffic and can cater for the needs of modern industry with direct services from ship to factory and vice versa.

Ninety-eight



STAGE ONE — SECTION FOUR

The Canal in the Borough of Wigan from Crooke Bridge to Top Lock, Aspall

Section Distace : 5 miles.

Bridges : Numerous, see plan. Minimum head-room 8 feet. Bell Hall Bridge 36 miles 2 furlongs, Railway 36 miles 4 furlongs, Kerliers Hall 36 miles 2 furlongs, Railway 36 miles 7 furlongs, Cale Lane 37 miles, Withington 37 miles 2 furlongs, Springs Bridge 37 miles 4 furlongs, Shedfield Bridge 37 miles 6 furlongs.

Locks : 25.

Dimensions : Ell Meadow, Pagefield and Wigan No. 23 and 22 : 72 ft. x 14 ft. Wigan 21 to Top Lock 62 ft. x 14 ft.

Docks and Basins : Several.

Wharves and Warehouses ; Numerous.

Total distance from P.O.O.: 37 miles.

As the canal enters Wigan there is a "flash" on the right at Crooke Bridge.

The County Borough has an area of 5,083 acres, a population of 82,750.

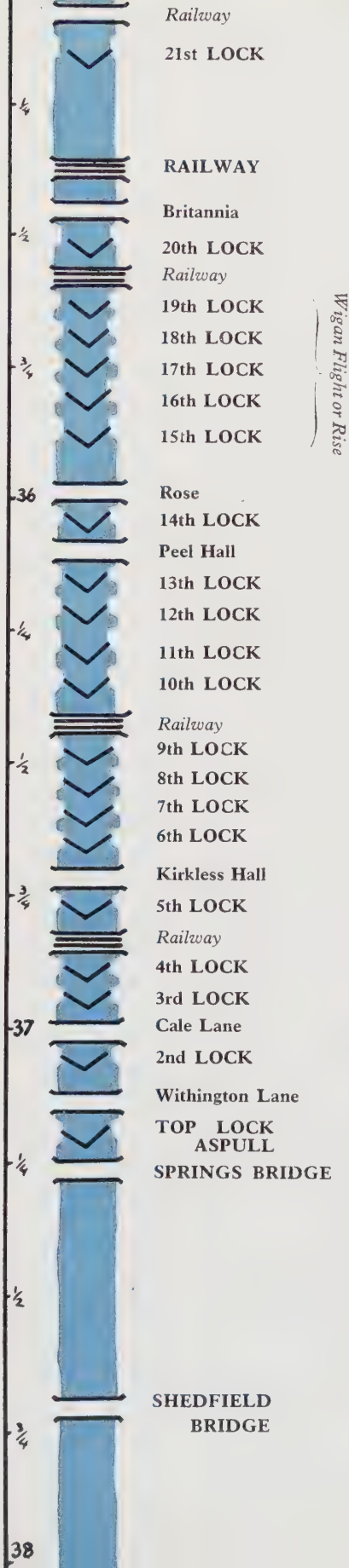
At mile 35 opposite the City's old Power Station the Leigh Arm of the waterway leaves right bank (see itinerary of Leigh Arm).

At mile 34½ are situated the extensive warehouses forming the Wigan Depot of British Waterways. Traffic for conveyance or storage can be handled from either barge or road vehicle. At this depot also is the office from which the control and operation of British Waterways Northern Fleet is conducted.

On the left bank is the office of the District Inspector of the S. Lancs. Engineering District, whilst on the opposite bank just below Lock 23 are the boat building and repair yards of Messrs. James Mayor and Co. Ltd.

Beyond Lock 23 can be seen the modern Engineering Shops of British Waterways. Recently completed at a cost of approximately £100,000.

The canal continues its course through a series of locks turning slowly to the north-east and at Rose Bridge mile 36 leaves the boundaries of Wigan.



STAGE ONE — SECTION FIVE

THE LEIGH ARM

Section Distance : 7¼ miles.

Locks : 2. Poolstock 5 furlongs.

Bridges : 21. Brewery 1 furlong, Lion 3 furlongs, Railway 6 furlongs, Moss 1 mile 2 furlongs, Railway 1 mile 6 furlongs, Railway 3 miles, Bamfurlong 3 miles 2 furlongs, Dover 3 miles 6 furlongs, Smith's 4 miles 3 furlongs, Railway 4 miles 6 furlongs, Gerrard's 4 miles 7 furlongs, Railway 5 miles, Plank Lane Swing Leigh 5 miles 2 furlongs, Bickershaw Colliery 5 miles 3 furlongs, Strange's Common 5 miles 6 furlongs, Railway 6 miles 2 furlongs, Barton's 6 miles 3 furlongs, Railway 6 miles 6 furlongs, Leigh Bridge 7 miles 2 furlongs.

Wharves : Numerous in Leigh.

Total distance from point of origin : 42¼ miles.

Immediately adjacent to the new Wigan (Westwood) Power Generating Station in Wigan at mile 35 on the right bank the Leigh Arm leaves the main canal.

Westwood Electricity Station is one of the modern plants operated by the Central Electricity Authority for supplying power to the National Grid.

Although the station is equipped to receive fuel supplies by canal, rail or road, the greater proportion of the intake is canal borne, the coal being obtained from the canal connected collieries on both the Leeds and Liverpool Canal and the Bridgewater Navigation.

On the right bank of this waterway is the suburb of Poolstock and on the left the northern head of the large lake and reservoir called Scotmans Flash. At five furlongs the twin locks of Poolstock lower the level by 15 feet to 83 feet above mean sea level, so the course of this waterway is down hill. The lakes of Scotmans Flash and Pearsons Flash are now on both sides of the canal, we thus have a unique feature of a canal running through a lake.

After the railway bridge at 1 mile 6 furlongs the waterway passes through the smaller lake Ince Moss. These reservoirs act as feeders.

The township of Bamfurlong is on the left. The canal then passes through open flat country with some collieries until at 5 miles 2 furlongs it reaches the Swing Bridge of Plank Lane and enters the Borough of Leigh. Here on the left bank of the canal is the great Bickershaw colliery. Since the nationalisation of the mines this colliery has been completely modernised, one important improvement being the loading of coal direct to the canal barge by an electric conveyor belt system. At Leigh Bridge it meets the Bridgewater Canal which carries traffic through to Manchester. The Leigh Arm ends at 42¼ miles from its origin at Liverpool. The Bridgewater Canal is privately owned and is not under the control and jurisdiction of British Waterways.



Leigh

Leigh is a Borough which received its Charter of Incorporation in 1899. In the centre of the town at King Stewart Bridge the arm of the Leeds and Liverpool Canal from Wigan joins the Bridgewater Canal placing Leigh in a favourable position with direct waterway links to the Ports of Liverpool and Manchester.

Modern Leigh is essentially an industrial town with a population of nearly 50,000 inhabitants, nearly 30,000 of whom are employed in the great textile, coal mining and cable manufacturing and general engineering industries.

The prosperity of Leigh and its establishment as the centre of the textile industry commenced in the canal era, because in 1763 when the Bridgewater Canal was opened, a Leigh man, Thos. Highs, invented "The Spinning Jenny" and in 1767 "The water frame" for twisting yarn. From these inventions have sprung the eminence of the Lancashire cotton industry in which Leigh plays a very important part with the largest cotton spinning mill in Lancashire. Next prominent, although interlocked, are the Leigh coal fields whose rich deposits are worked by some of the largest, deepest, and most modern mines in England.

In addition to these major industries there are many varieties of factories producing light goods and textiles.

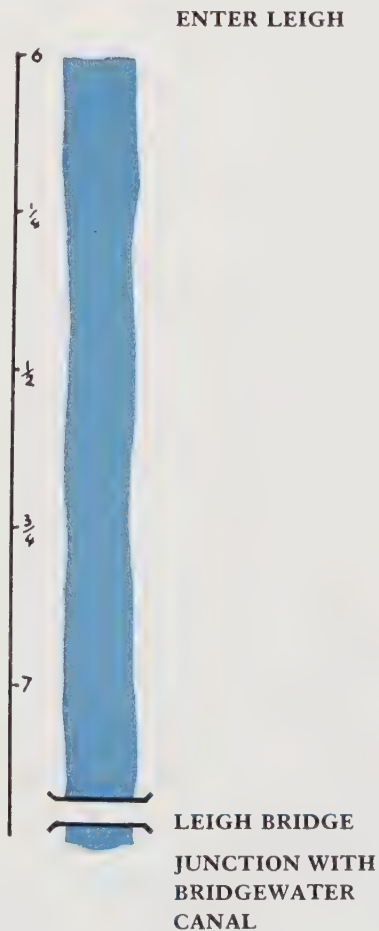
Useful Information about Leigh

There are excellent transport services :—

By rail : There are four stations : Atherleigh, Westleigh and Pennington on the Liverpool-Bolton line, Leigh Main Station on the Liverpool-Manchester line.

By bus : Leigh Corporation Passenger Transport Dept. provides the internal and local services, and Lancashire United Transport covers the surrounding districts to Liverpool, Manchester and Wigan.

By waterways : There is through ship to factory service on the two canals connecting Leigh with Liverpool or West Yorkshire by the Liverpool to Leeds Canal, and with Manchester by the Bridgewater Canal.



The Bridgewater Canal

In the annals of Lancashire the third Duke of Bridgewater and his engineer, the eccentric but nevertheless genius, James Brindley, hold the highest place for their part in the industrial development of the county.

In 1761, the first part of the Bridgewater Canal was opened from Worsley to near Manchester, enabling coal to pass direct from the coal face via many miles of underground canals to the heart of the growing textile centre. This was followed by an extension of the canal to the River Mersey at Runcorn in 1773, providing Manchester with better access to the sea-board for the import of cotton and other raw materials and the export of manufactured goods, than by the older Mersey and Irwell Navigation.

Finally, in the early 19th century the canal was lengthened by the cutting of a new section from Worsley to effect a junction with the Leeds and Liverpool Canal at Leigh.

The success of the first canal ventures of the Duke set the stage for the rapid development of the waterway system of this country during the canal era of 1760-1830, and Lancashire in particular, derived considerable benefit from the cheapening of transport costs on canal and other merchandise. At the present time half a million tons of coal passes over the canal each year.

In 1887 the Bridgewater Canal passed into the ownership of the Manchester Ship Canal Company which obtained an Act in 1885 to construct a ship canal from Manchester to the Mersey Estuary. The opening of the Ship Canal in 1894 enabled inland waterway craft to ply between many places in Lancashire and ocean going ships at the Manchester Docks, using the Bridgewater and Leeds and Liverpool Canal route. Access to the Ship Canal is by a flight of locks at Manchester and another at Runcorn.

During the two centuries which have passed since the Bridgewater Canal was opened the waterway has maintained prestige in the industry and was excluded from

nationalisation as it is a subsidiary Department of the Manchester Ship Canal, a Statutory Dock undertaking.

As one of the many projects to improve the canal, in 1947, the canal was deepened between the Manchester terminus and the industrial estate of Trafford Park, ostensibly to allow deeper drafted barges loaded with maize to navigate to Kellogg's factory at Stretford where 100,000 tons or more of grain is received each year.

The Bridgewater pre-war fleet of wooden barges has been substituted by 25 steel barges of the latest construction including 6 motor driven barges equipped with Gardner engines. Similarly engineering craft have been replaced by steel craft incorporating the latest mechanical aids for dredging and general maintenance.

Latterly, deepening of the Manchester end of the canal has been taken a step further so that in comparison with 50 ton cargoes carried in the wooden pre-war barges, the new steel craft are loading upwards of 80 tons.

The Terminal Docks of the Bridgewater Canal at Runcorn which offer facilities for coastwise and deep sea vessels up to 1,200 burden have been undergoing a gradual modernisation since 1945 in order to expedite turnaround of shipping and the more economical handling of traffic to and from the extensive warehouse and open wharf accommodation.

Extensive warehouse accommodation is also operated by the Bridgewater Undertaking at Preston Brook, Warrington and Manchester, served by water transport and ancillary road vehicles.

The hub of the Bridgewater operations is still at Chester Road, Manchester 15 (Blackfriars 4435), the former residence of the third and last Duke of Bridgewater.

(With acknowledgements to the late Manager of the Manchester Ship Canal Company, Bridgewater Department, Norman N. Bird, M.B.E., F.I.C.S., M.Inst.T.)

The Itinerary and Sectional Plans of Stage Two

WIGAN TO BLACKBURN

Stage distance : 21 miles.

Total distance : 58 miles.

IN FOUR SECTIONS.

From mile 37 to mile 58.

<i>Section One</i>	...	Wigan to Chorley, 7 miles 6 furlongs.
<i>Section Two</i>	...	Chorley, 1 mile 2 furlongs.
<i>Section Three</i>	...	Chorley to Blackburn, 8 miles 2 furlongs.
<i>Section Four</i>	...	Blackburn, 3 miles 6 furlongs.

STAGE TWO — SECTION ONE

Top Lock, Aspull, Wigan to Cowling Road Bridge, Chorley

Bridges : Springs 37 $\frac{1}{4}$ miles, Shedfield 37 miles 7 furlongs, Haigh Hall 38 miles 1 furlong, Sennicar 38 miles 6 furlongs, Penblebury 39 miles, Red Rock 39 miles 6 furlongs, Arley Bridge 40 miles 2 furlongs, Anderton 40 miles 6 furlongs, Aberdeen 41 miles, Waterhouse 41 miles 2 furlongs, **Aqueduct** over River Douglas 41 miles 4 furlongs, Red House 41 miles 6 furlongs, White Bear 42 miles, Rigshaw Hall 42 miles 3 furlongs, Rawlinson's 42 miles 6 furlongs, Railway 43 miles, Idle 43 miles 1 furlong, Chorley Road 43 $\frac{1}{2}$ miles, Giles 43 miles 6 furlongs, **Aqueduct** over River Yarrow 43 miles 7 furlongs, Ridding 44 miles, Railway 44 miles 3 furlongs, Barracks 44 miles 4 furlongs, Cowling 44 miles 6 furlongs.

Locks : None.

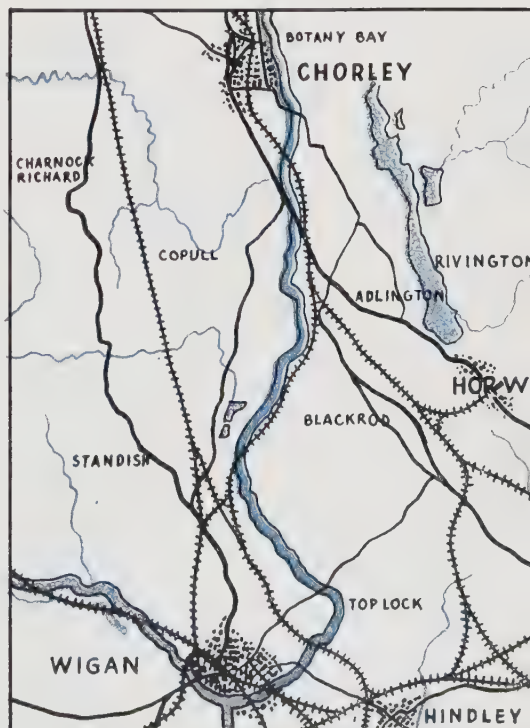
Wharves : Infrequent.

Total distance : 44 miles 6 furlongs.

At the top of the Wigan Locks, 298 feet above mean sea level, the canal enters the south end of Rennie's Lancaster Canal which was leased in perpetuity from the L. and N.W.R. in 1864 and forms an integral part of the Leeds and Liverpool main line canal.

The canal continues on a winding but northerly course through open and wooded countryside with a particularly beautiful point past the woods and park at Haigh Hall at mile 38.

Railway and canal run together in a valley until the canal enters Chorley at Cowling Bridge mile 44 6 furlongs. There are several mills on the banks but no general industry until it reaches Chorley. It follows very closely the railway line between Wigan and Chorley and the main road A.5106 is on the left-hand side.



STAGE TWO — SECTION TWO

THE MUNICIPAL BOROUGH OF CHORLEY

Section distance : 1 mile 2 furlongs.

Bridges : 5.

Aqueducts : 1.

Locks : Nil.

Wharves : Numerous.

Total distance from point of origin 46 miles.

Running in a northerly direction. The canal enters the Municipal Borough of Chorley on the eastern side of the town and does not pass through the built-up area. A new by-pass main road is planned for development alongside the left bank of the canal.

The town is chiefly engaged in the manufacture of cotton goods, floor coverings, and dairy farming.

Within ten miles of Chorley are to be found the great Lancashire towns of Bolton, Blackburn, Preston and Wigan and within easy reach are the great Cities of Liverpool and Manchester. For those seeking pleasure Blackpool, Morecambe and Southport on the west coast are easily reached and Scarborough and Bridlington on the Yorkshire coast also have their quota of Chorley visitors.

Not only is Chorley important from the point of view of the Leeds and Liverpool Canal but also because the A.6 road from London to Manchester and the North West runs through the centre of the town.

Until comparatively recently Chorley has been a centre almost wholly devoted to the cotton industry, but to-day there are a number of other industrial concerns in the area and there are excellent opportunities in the way of sites, labour and transport facilities for any further industries who wish to establish works within the Borough.

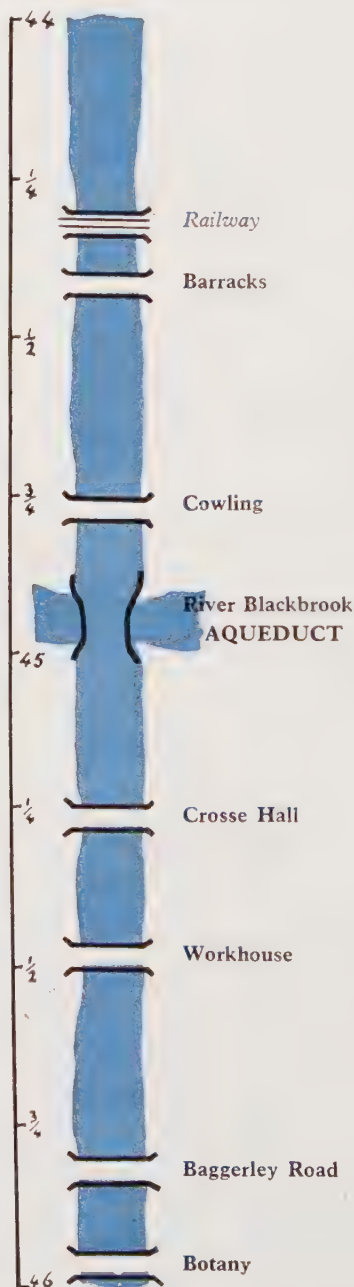
At Botany Bridge mile 46 the canal leaves Chorley.

Useful Information about Chorley

HOTELS

Hartwood Hall Hotel, Preston Road. Tel. 3304.
Royal Oak Hotel, Market Street. Tel. 2858.

One hundred and four



STAGE TWO — SECTION THREE

Botany Bridge, Chorley to Cherry Tree Bridge, Blackburn

Section distance : 8 miles 2 furlongs.

Bridges : 23. Railway Chorley 46 miles 2 furlongs, Knowley 46 miles 4 furlongs, Mess Lane 47 miles, 4th Lock Bridge 47 miles 6 furlongs, Top Lock Bridge 48 miles, Whins 48 miles 2 furlongs, Engine 48 miles 4 furlongs, Simpson's Fold 48 miles 5 furlongs, Brown House 49 miles, Stony Flat 49 miles 2 furlongs, Whithnell Fold 49½ miles, Ollerton No. 3 50 miles, Ollerton No. 2 50 miles 1 furlong, Ollerton No. 1 50 miles 2 furlongs, Riley Green 51 miles, Finnington 51 miles 4 furlongs, Millfield 51 miles 6 furlongs, Stanworth 52 miles 3 furlongs, **Aqueduct** over River Roddlesworth, Feniscowles 53 miles, Railway 53 miles 1 furlong, Livesey Hall 53 miles 2 furlongs, Cherry Tree Blackburn 54 miles 2 furlongs.

Locks : 7. Johnson's Hillock Flight.

Wharves : Infrequent.

Total distance : 54 miles 2 furlongs.

At mile 47.4 furlongs commences another famous flight of locks. It is known as "Johnson's Flight" which carried the canal over Johnson's Hillock raising the level from 298 feet to 363 feet. At the foot of these locks is the junction between the Leeds and Liverpool Canal and the South End of the Lancaster Canal which continues for a further three miles towards Preston to the Walton Summit, once a busy site where all cargoes were transhipped to and from tram wagons to complete the journey to the North End of the Lancaster Canal.

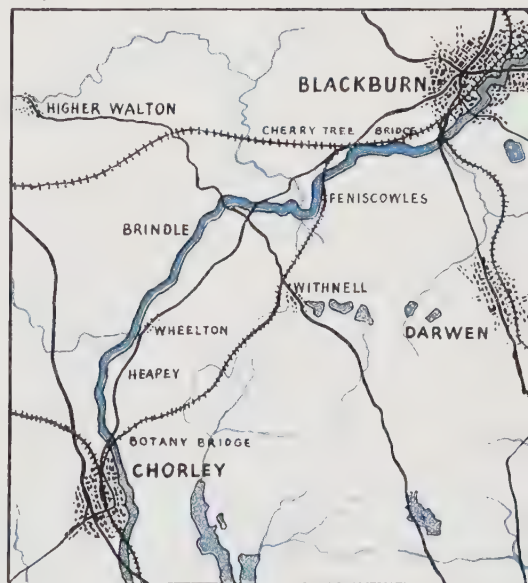
For many years this length known as the Walton Summit Branch has been disused.

The small town of Withnell at mile 49½ is noted for the manufacture of paper, cotton goods, bricks and fireclays.

At Riley Green Bridge mile 51, the canal turns to the east to continue its winding course through both wooded and open country.

At mile 52, there are small reservoirs on both banks and some paper mills nearby.

The canal does an 'S' turn through north to east at Feniscowles with the main road, A.764, on the left bank. At Feniscowles there are large newspaper making mills and also some cotton and weaving mills. From Feniscowles to Cherry Tree Bridge where the canal enters Blackburn there are factories on both banks.



THE CITY OF ST. LOUIS

Section 1000 - St. Louis, Mo.

Page 10

Section 1000

Section 1000

Section 1000 - St. Louis, Mo.

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Section 1000 - St. Louis, Mo.



Near Higher Whitebirk Bridge the huge cooling towers of the great Whitebirk Electricity Generating Station will be seen. Vast quantities of coal are conveyed by canal craft from the Burnley and Wigan collieries to this station where the fuel is efficiently and speedily discharged direct from barge to a conveyor belt.

At Whitebirk Bridge near where the canal crosses the Borough boundary there is the yard of T. and J. Hodson. Near Higher Whitebirk stretches of the waterway, particularly between Feniscowles and Chorley are used for pleasure boats and the Company of Sea Scouts from the Blackburn Ragged School has a training boat moored at Whitebirk.

Useful Information about Blackburn

Information and Advice Bureau, 7, Tackett's Street.

Ministry of Labour and National Service, King's Street.

Chamber of Commerce, 4, Richmond Terrace.

Chamber of Trade, 4, Strawberry Bank.

Hotels :

Elmhurst Residential Club, Newton Road. Tel. 42156.

Embassy Private Hotel, 333, Roundhay Road. Tel. 42135.

Newlaithes Hall Hotel, Horsforth. Tel.: Horsforth 3241.

Oaklands, Laurel Mount. Tel. 41535.

Trafford House, 18, Cardigan Road. Tel. 54793.

White Bull Hotel, Church Street. Tel. 414911.

Witton Bank Hotel, Spring Lane. Tel.: Blakewater 42175.

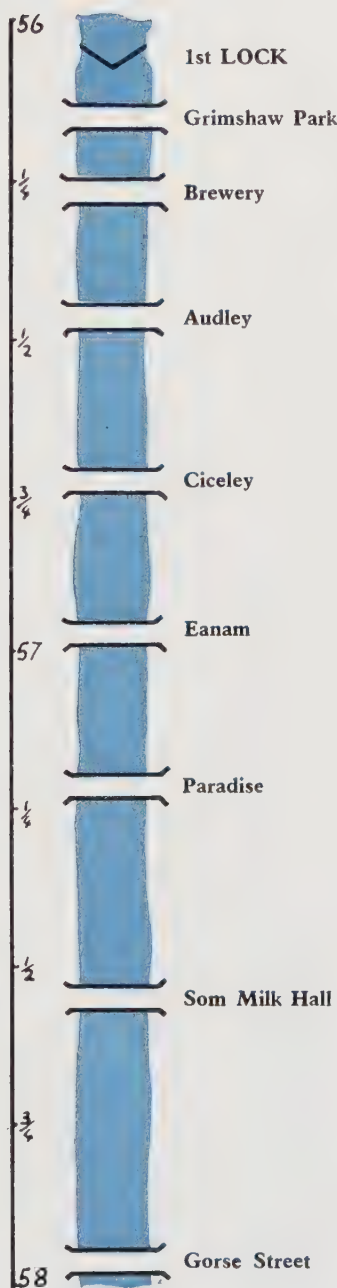
Y.H.A. Hostel, Burley Woodhead. (Wed. Closing Scheme 3.)

Postal address : The Warden, Moor House, Burley Woodhead, Burley-in-Wharfedale, Leeds, Yorkshire. Tel.: Burnley 325911.

Hostel details : M.54. W.38. S.J.P. Store at Hostel. Milk and bread to order. E.C.D., Wed P.O. Burley-in-Wharfedale. Open air baths, Ilkley. Closed January 8th-10th ; May 13th-19th ; October 21st-November 2nd ; December 31st, January 2nd.

Station : Burley-in-Wharfedale, 1 mile. **Bus :** Bradford-Ilkley ; Leeds-Ilkley $1\frac{1}{4}$ mile (Burley-in-Wharfedale).

Next Hostels : Dacre 12 miles ; Linton 14 miles ; Haworth 15 miles ; York 35 miles.



The Itinerary and Sectional Plans of Stage Three

BLACKBURN TO BURNLEY

IN ONE SECTION.

Mile 58½ to mile 74.

SECTION ONE

Gorse Street Bridge, Blackburn to Aqueduct over River Brun, Burnley, Mile 74

Stage distance : 15½ miles.

Bridges : 46. Minimum headroom : 9 feet.

Tunnels : 1.

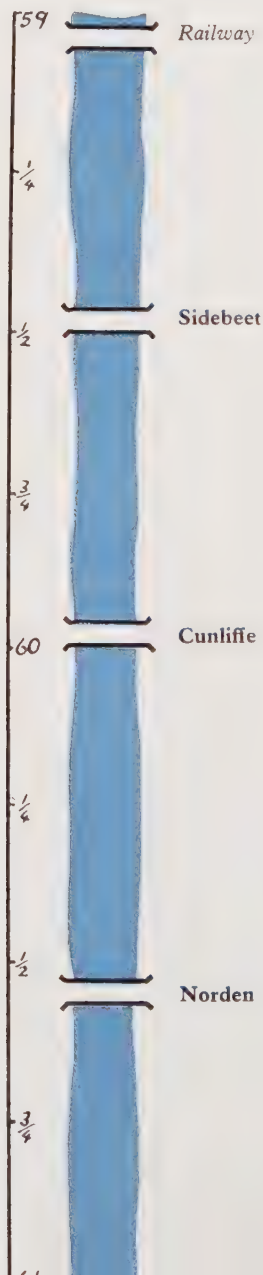
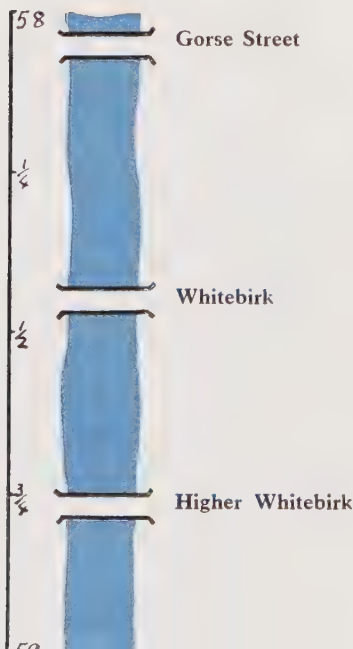
Locks : Nil.

Aqueducts : 3.

Wharves : Numerous on both banks.

Total distance from point of origin : 74 miles.

The canal leaves the Blackburn boundary near Whitebirk Bridge at mile 58 4 furlongs. It takes a very winding course, frequently changing direction between North and East through open country with the railway on the left bank. At mile 60 on right is the Rishton Reservoir, which feeds this section of the canal. At Norden Bridge the Waterway enters the town of Rishton, round which it makes a bend from East to South leaving Rishton on the right bank. There are factories and wharves on both



banks of the canal in Rishton, these manufacture cotton and fireclay goods and paper. There are also important coal mines in and near the township with canal facilities available. On the banks of the river which feeds it, there is a promenade.

At the railway bridge at mile 62 5 furlongs the canal approaches Church where British Waterways have important warehouses and wharf facilities. In 1955 an additional extensive warehouse complete with modern equipment was erected at a cost of £16,000 specially for the storage and handling of machinery. These large cases are loaded to canal barge by an electrically operated overhead gantry and conveyed to the docks at Liverpool and Birkenhead for direct overside loading to ocean going ship.

There are a large variety of industries served by the canal in this locality, notably the manufacture of spinning machinery, cotton goods, chemicals, bricks and tiles, brick making machinery, furniture, healds and reeds, artificial silks and rayons, agricultural machinery and calico printing.

The canal does not enter Accrington but skirts the north side on a very twisting course, finally leaving the locality in a northerly direction.

At mile 64 the canal enters Clayton-le-Moors—population 7,010. Clayton-le-Moors is a small town whose industrial interests lie in the manufacture of cotton goods, and the machinery used in laundries. It is also the centre of a coalfield. After leaving the Urban District the canal continues in a winding valley through open agricultural land.

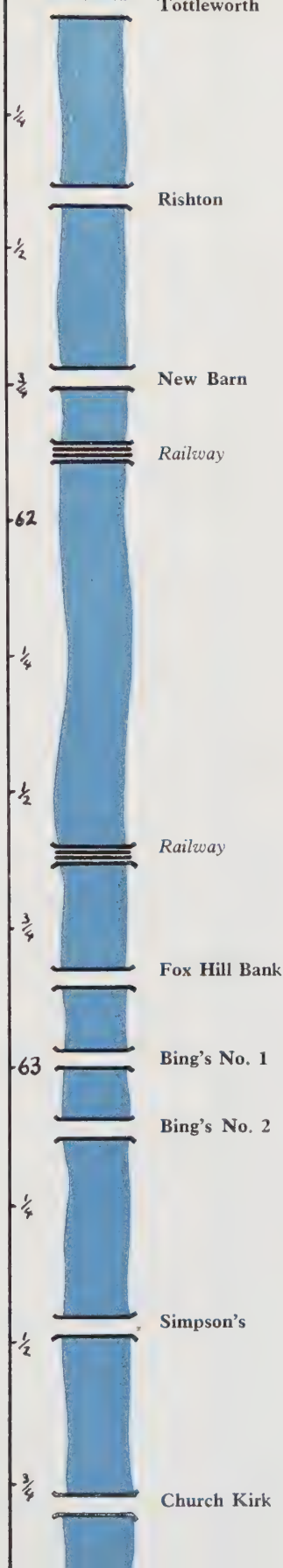
At mile 65 6 furlongs, on the right bank, is an extensive colliery and here the course of the waterway turns east. For the next two miles it passes through open country.

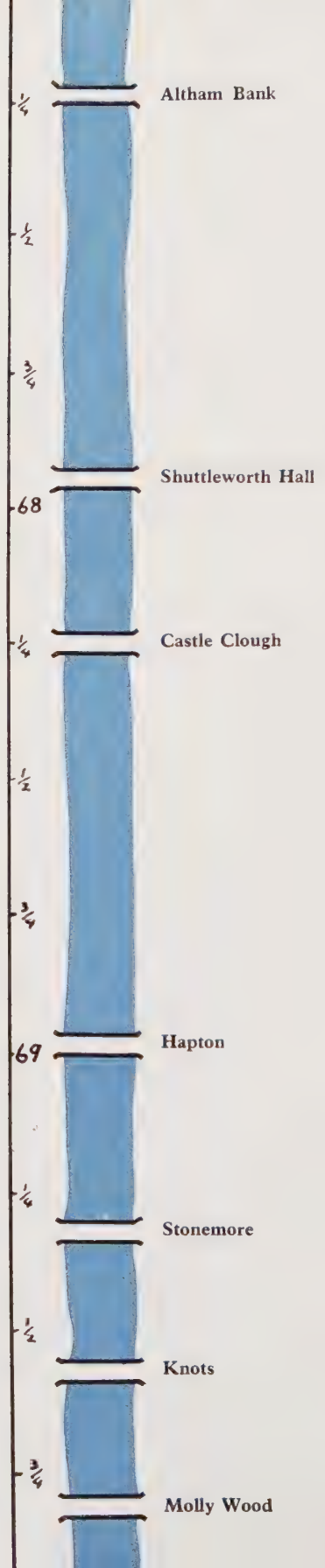
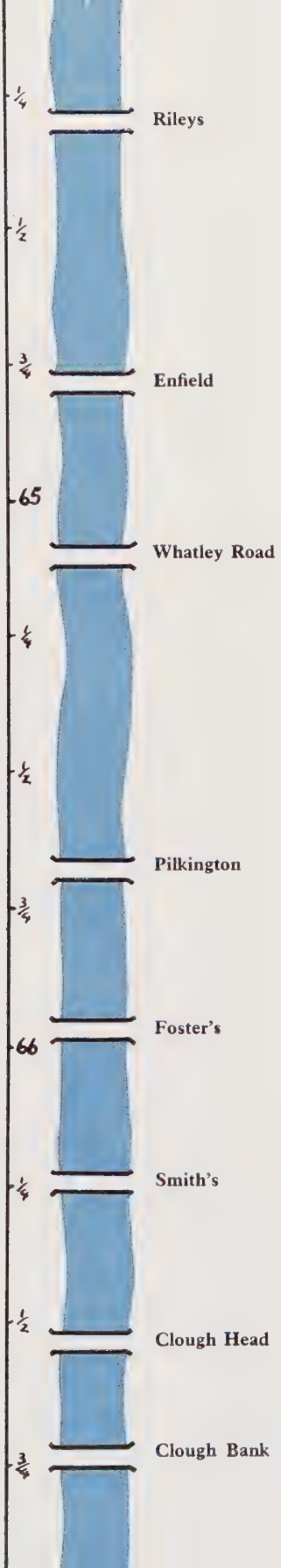
At the bridge at mile 68 on the left bank stands Shuttleworth Hall.

The village of Hapton at mile 69, Hapton Bridge, is a coal mining centre, with mills and chemical works as the chief industry.

Burnley is entered at Rose Grove Bridge, just past mile 70. Burnley is close to the Bronte country and is also within easy reach of the seaside resorts of Lancashire, the Yorkshire moors and dales and Lake District.

Its present commercial importance was brought about by its easy means of communication by road, rail and canal with the great industrial areas of





Lancashire and Yorkshire, and the extensive coal mining in the area. The canal runs round three sides of the town and fulfils the double function of providing cheap means of transport and also an adequate supply of water to meet the needs of industry, especially the mills, which are mainly adjacent to the waterway. Cotton is still the main industry interest although over a million tons of coal are mined annually.

Burnley has several historical connections with the Canal. It was here that many of the early discussions took place regarding the possibility of constructing a canal between Yorkshire and the West Coast. Burnley remains an important canal centre and on the right bank of the canal, near Finsley Gate Bridge, are the extensive premises of the British Waterways N. Lancs. District Engineering Inspector, embracing workshops, sawmills and pile making plant. These piles are constructed of reinforced concrete and are used to prevent the canal banks from erosion caused by passing craft.

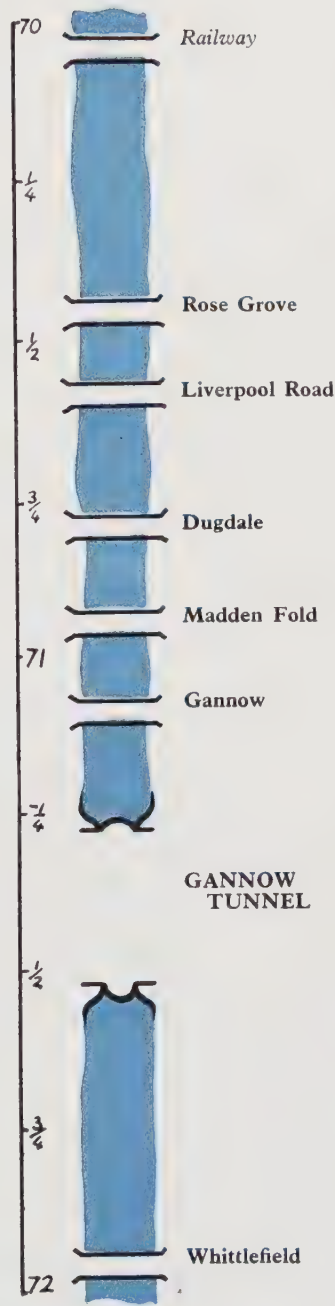
The great Burnley Embankment, which carries the Canal over the Calder Valley, is 1,256 yards long and 60 feet high. Gannow Tunnel in Burnley—599 yards long and Foulridge Tunnel in the Burnley Rural District—approximately one mile long—were major engineering feats in their time. The principal reservoirs for supplying the canal are in the Burnley Rural District. Foulridge Reservoir is capable of containing 37,300,000 gallons ; Slipper Hill Reservoir 38,825,000 gallons ; and Whitemoor Reservoir, constructed in 1865-6, can hold 145,290,000 gallons. This latter reservoir covers an area of approximately 35 acres.

Useful Information about Burnley

There are four railway stations : Central, Barracks, Rosegrove and Manchester Road. There are extensive sidings at Central and Rosegrove, with links to local industrial sites.

The town and district are well served by the Ribble Motor Services Limited (Local Office : No. 2, Parker Lane).

Places to see in and near Burnley include the following historic houses.



Gawthorpe Hall :

Home of the Shuttleworths since 1330. Early 16th century house around Pele Tower, it is situated 3 miles west of Burnley on Padiham-Preston Road (A.671). Open by arrangement. Write to Visitors' Secretary, Gawthorpe Hall.

Towneley Hall :

Now a museum, it is situated $\frac{1}{2}$ mile south east of Burnley on the Burnley-Todmorden Road (A.646). Open all the year—weekdays. Admission free. Closed Christmas and Boxing Day.

Chamber of Commerce, 101, Manchester Road.

Chamber of Trade, 9, Nicholas Street.

Ministry of Labour and National Service, Finsley Gate. Burnley 3265.

Customs and Excise, Curzon Street. Burnley 2794.
British Road Services, Barracks Road. Burnley 2112.

British Railways Passengers, Central. Burnley 6256.
Goods. Burnley 2251.

Factory Inspector, 1, St. James' Row. Burnley 2927.

Hotels :

Carlton Hotel, Standish Street. Tel. 350811.

Cross Keys Hotel, St. James's Street. Tel. 36011.

Empress Hotel, Market Place. Tel 380611.

Ighten Leigh Commercial Hotel, 298, Padiham Road. Tel. 205911.

Nelson Hotel, The Centre. Tel. Nelson 218.

Sparrow Hawk Hotel, Church Street. Tel. 343811.

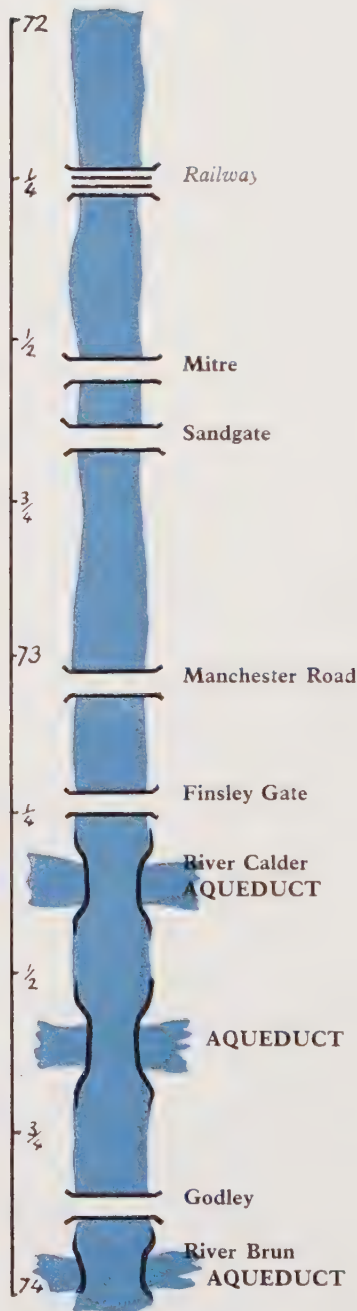
Thorn Hotel, St. James's Street. Tel. 224411.

Yorkshire Hotel, 36, Yorkshire Street. Tel. 274411.

Transport Facilities

Distances from Burnley

	Miles	
	Rail	Road
To London	212	200
„ Manchester	28	25
„ Liverpool	48	45
„ Preston	22	20
„ Todmorden	9 $\frac{1}{2}$	9
„ Birmingham	112	107
„ Sheffield (via Manchester) ...	67	62
„ Sheffield (via Todmorden) ...	56	50



The Itinerary and Sectional Plans of Stage Four

BURNLEY TO NELSON

IN ONE SECTION.

Mile 74 to mile 79.

Stage distance : 5 miles.

Bridges : 18.

Locks : Nil.

Wharves : Numerous.

Total Distance : 79 miles.

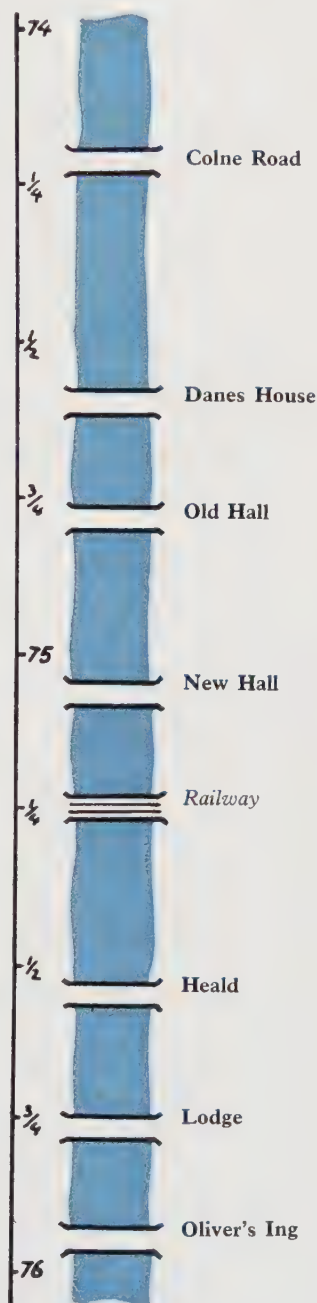
Immediately beyond Brun Aqueduct at mile 74 is the canal loading basin of the Bankhall Colliery. The coal is conveyed from the Colliery washery in hopper type rail waggons to the loading basin where it is dropped on to a conveyor belt which discharges into barge.

At mile 76.6 furlongs, the canal passes Brierfield, a small township midway between Burnley and Nelson. The manufacturing interests are mainly cotton goods, jams, tinned fruits and sweets. The factories are served by the canal.

Meadow Bank Site at 76 miles adjoins the canal. The site can be approached from Clitheroe and Holden Roads and is equipped with all the essential services necessary to industrial expansion. On two sides there are main sewers and water is also available both for domestic and commercial usage. Gas and electricity are also available at the site and the railway sidings are adjacent.

At mile 77, the canal commences to skirt the outskirts of Nelson by turning to a north easterly course and leaving the town on the east side. There are large cotton mills and factories on both banks and several collieries. Other industries include, brick-making, stone quarrying and iron foundries.

The Municipal Borough of Nelson was granted its Charter of Incorporation in 1890 and probably took its name from the large Lord Nelson Inn which still stands in the centre of the town. Canal traffic is dealt with at the Carr Road Warehouse.



The population numbers over 33,000 and it is near to other large and populous areas of industry and commerce. Distances from London, 209 miles ; Burnley, 4 miles ; Colne, 2 miles. One of these areas is the Borough of Colne with a population of 20,000, which is a marketing and manufacturing centre. There is a scheme for the provision of additional playing fields on a site adjacent to the canal and when completed there will be five winter games pitches, three cricket tables, two net-ball pitches, pavilion, store shed, access road and paths.

Swindon Hall is situated on the south side of the canal near the Nelson/Colne boundary.

Useful Information about Nelson

Town Hall—containing the offices of the Town

Clerk, Borough Treasurer and Borough Engineer. Medical Officer of Health, 21, Carr Street.

Water Department, Every Street.

Cleansing Department, Charles Street.

Education Department, Market Street.

Telephone number for all above Departments :
Nelson 1140.

Chamber of Trade, Secretary, Mr. S. Street,
23, Market Square, Nelson.

Information Bureau, Town Hall, Nelson.

Ministry of Labour and National Service, Seldon
Street, Nelson.

British Railways, Passenger and Goods Depot,
Nelson.

Customs and Excise, Lanyork Chambers, Nelson.

Development Committee, Town Hall, Nelson.

Trading Estate, White Walls Industrial Estate,
Colne.

Hotel :

Station Commercial Hotel, Hibson Road. Tel.: 148.

Useful Information about Colne

British Railways—Passenger, Colne 463. Goods,
Colne 287.

British Road Services, North Valley Road.
Colne 560.

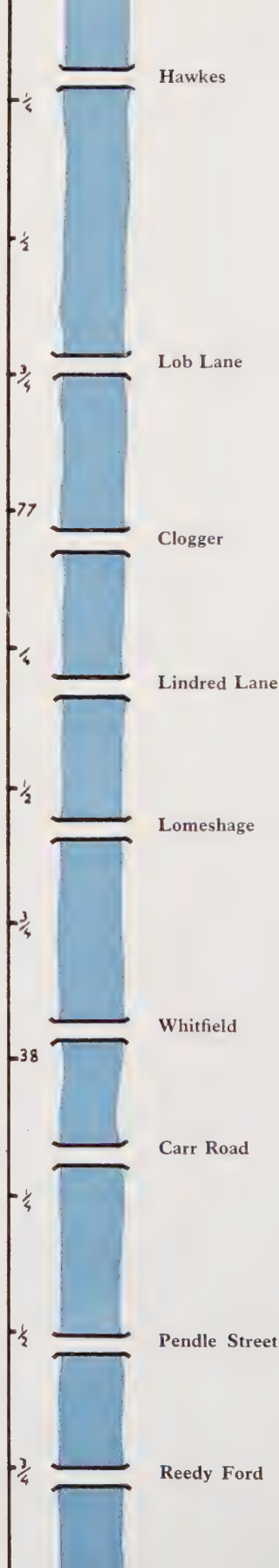
Customs and Excise, 1, Richmond Road. Colne 718.

Hotels :

Crown Hotel, Albert Road. Tel.: 199.

Langroyd Hall Club. Langroyd, Colne.

One hundred and fourteen



The Itinerary and Sectional Plans of Stage Five

NELSON TO SKIPTON

IN ONE SECTION.

Mile 79 to mile 99.

Section distance : 20 miles.

Bridges : 49 (see list).

Tunnels : One—Foulridge—1,640 yards long.

Locks : 22 (see list).

Wharves and Wharehouses : Several in Skipton.

Total distance : 99 miles.

Bridges

Hodge House 79 miles, Swinden 79 miles 2 furlongs, Aqueduct 79 miles 3 furlongs, Barrowford Road 80 miles, Blakey 81 miles, Wanless 81 miles 2 furlongs, Railway at Foulridge 82 miles 2 furlongs, Dobers 82 miles 5 furlongs, Hollinghurst 82 miles 7 furlongs, Mill Hill 83 miles, County Brook Aqueduct 83 miles 1 furlong, Hatters 83 miles 2 furlongs, Salterforth 84 miles, Park 84 miles 3 furlongs, Railway 84 miles 4 furlongs, Cockshott 83 miles 6 furlongs, Long Ing. 85 miles 2 furlongs, Eastwood 85 miles 4 furlongs, Coates 85 miles 6 furlongs, Banks 86 miles, Greenberfield 86 miles 2 furlongs, Greenberfield Change Line 86 miles 7 furlongs, Southfield 87 miles 4 furlongs, Old Hall 88 miles 6 furlongs, Double Arch 89 miles, Williamsons 89 miles 2 furlongs, Langber 89 miles 4 furlongs, Hulber Dyke Aqueduct 90 miles 2 furlongs, Newton Grange 91 miles, Newton Lock Bridge 91 miles 4 furlongs, Priest Holme 92 miles, River Aire Aqueduct 92 miles 1 furlong, Railway 92 miles 2 furlongs, Anchor 92 miles 6 furlongs, Higherland 93 miles, Eshton Road, 93 miles 3 furlongs, Ray 93 miles 5 furlongs, Eshton Beck Aqueduct 93 miles 7 furlongs, Holme 94 miles, Highgate 94 miles 4 furlongs, Thorlby 95 miles 4 furlongs, Niffany 97 miles, Gawflat 97 miles 6 furlongs, Brewery 98 miles, Eller Beck Aqueduct 98 miles, Belmont (Skipton Town Centre) 98 miles 3 furlongs, Gallows 98 miles 5 furlongs, Pinder 98 miles 5 furlongs, Railway 98 miles 6 furlongs, Horse Close 99 miles.



Locks

Between mile 79½ and mile 80 Barrowford Flight, 7 locks to summit. Going downhill from the summit at 86 miles 4 furlongs, Greenberfield Flight, 3 locks. At mile 91 1 furlong the first of Bank Newton Grange Flight, 6 locks known as Banknewton Locks ; at mile 92 2 furlongs commences the Cargrave series, Stegneck 92 miles 4 furlongs, Scarlan 92 miles 6 furlongs, Anchor mile 93, Higherland mile 93 2 furlongs, Low Warehouse 5 in the group, mile 94 single lock of Holme Bridge.

The canal continues from Nelson on a North Easterly course with mills on the banks and at mile 79.5 furlongs is Barrowford Bridge, which connects Barrowford on the left bank with Colne on the right. This marks the end of the industrial area as the canal ascends the last flight of locks to reach the summit.

Barrowford—population nearly 5,000—at mile 79.4 furlongs is adjacent to Colne. This locality has a large farming community which calls for considerable quantities of cattle foodstuffs. The chief industries of the district are cotton manufacturing, tanning and the constructions of cotton making machinery. 300 acres on the west side of the canal has been bought for industrial development. This site is near Barrowford Bridge.

The Leeds and Liverpool canal passes through the Parishes of Altham, Foulridge, Hapton and Reedley Hallows, which are all in the area of the Burnley Rural District Council.

In Altham, Foulridge and Hapton the canal passes through the villages. Industries have already been established near the canal and many of them draw their water and coal supplies from that transport source. They are all on or near main bus routes and at Hapton and Foulridge the canal is very near to the goods and passenger railway stations. Foulridge has wharfing facilities.

Sites suitable for industrial development are available in the three villages mentioned, though no plans have been prepared. Hapton and Foulridge form part of the North East Lancashire Development Area.

Barrowford flight of seven locks raises the water level from 418 feet to 487 feet above mean sea level and carries the canal into the Summit Pound, which is 6½ miles long on the level of 487 feet above mean sea level. It is into this Summit Pound that water is fed from the reservoirs.

Barrowford Reservoir lies on the right of the canal, half way up the flight of locks.

Covering an area of 17 acres the Reservoir has a capacity of 100 million gallons. It is a "balancing" reservoir, receiving the surplus water from the canal, storing it, and returning the supply as required.

At mile 81 2 furlongs the waterway enters the west end of Foulridge Tunnel.

Foulridge Tunnel

British Waterways, like other Divisions of the British Transport Commission is taking full advantage of modern techniques.

In 1816 the Leeds and Liverpool Canal was opened to traffic throughout its length and from that year to the present day, barges conveying approximately 50 tons have been passing along this 127 mile waterway.

The Canal, on its route from Yorkshire to Lancashire, had to climb to an elevation of 487 feet in its ascent over the tail end of the Pennines and John Longbotham, the original Canal Engineer who surveyed the line, decided that on arrival at the village of Foulridge, the canal instead of being locked over the final summit, should pass through a tunnel to reach Barrowford on the South Western slope of the hills.

This is Foulridge Tunnel extending for nearly a mile—1,640 yards—under the Pennine Range, and which during the past few years has attracted attention, as it did when it was opened in 1792 and again in 1912 when a cow swam the whole length, being revived with brandy on its arrival at the other end.

A system of automatic colour light signalling and timing has been introduced for the more efficient control of traffic through the tunnel.

The scheme involved the use of synchronous timing units for the control of the signal heads and the outdoor clocks and this

equipment was produced by Messrs. Synchromatic Times Recording Co. Ltd., of Liverpool and London.

Operation is similar to time controlled road traffic lights except that the amber light has been eliminated. At either end of the tunnel red and green colour light signals have been installed, but a unique additional feature is the introduction of a clock immediately above each signal. This clock, with a diameter of 18 inches, is coloured red, except for a narrow green segment shown on the face of the clock and extending for a five minute interval. The hands are painted silver and show prominently against the coloured face. Craft may enter the tunnel at the Foulridge end between the hour, and five minutes past the hour, as shown by the green segment on the clock, and during this time the colour light signal shows green. On the last second of the five minute interval the signal changes to red, stopping all traffic in that direction.

Similarly, at the Barrowford end of the tunnel traffic can only enter during the five minute interval between 30 and 35 minutes past the hour, during which period the colour light signal shows green and the five minute interval is shown by the green segment on the clock face.

Thus control of traffic at each end of the tunnel is maintained and in addition boatmen are made aware of the time they must wait for the "green."

By the introduction of the new system increased efficiency, great safety, and a substantial economy in traffic operation has resulted.

At the top of the hill through which the canal tunnels are the large Foulridge Reservoirs which feed the canal above Barrowford Locks to provide the water for the downhill course from the summit to Liverpool. There are four reservoirs in this area which feed the canal. In addition to this, one is used by an Angling Club and another is the headquarters of the Burwain Sailing Club, and is often bright with the many coloured yacht sails of sailing enthusiasts.

On leaving the east end of Foulridge Tunnel the canal turns to the north and runs through open country in a valley with moors to the west, and the railway and main road from Colne to Skipton on to the east, A.56.

At mile 85 on the left bank stands the small town of Barnoldswick with several large mills alongside the canal.

The canal continues its north easterly

WINTFURN RESERVOIR



course in the winding valleys between the moors, and through agricultural country.

The feeder pipe line from Winterburn Reservoir enters the summit pound near Greenberfield Bridge mile 86 2 furlongs.

The construction of the reservoir, which became necessary to ensure an ample supply of water for increasing traffic requirements, was completed in 1892, the work consisting principally of the closing of part of the Eshton Valley by a huge Dam.

Winterburn reservoir stretches for some 1,200 yards along the Valley, collecting its 280 million gallons of water from the surrounding water sheds of approximately six thousand acres.

The great Dam is constructed of earth with a puddle clay core. From the bottom drain level to the over-flow sill, it towers to a height of 61 feet 9 inches stretching for 250 yards across the Valley. The upstream slope of the Dam is faced with fine Ashlar masonry which has become mellowed with age and blends harmoniously with the surrounding landscape.

Water from the Reservoir is conveyed to the top level of the Canal at Greenberfield some 10 miles distance, by a 2 ft. 6ins. diameter pipe line. Through this duct since 1893 has passed the countless millions of gallons of water, which after performing its function of "lock operation" passes on its winding way to river and sea.

At mile 86. 4 furlongs the first lock of Greenberfield 3 commences to carry the waterway down hill from the summit into Leeds, and the three locks change the level from 487 feet to 458 feet above mean sea level.

The waterway continues on a very sinuous course through open moorland and wooded country.

At mile 91 is the village of Bank Newton. At mile 91. 1 furlong, the first of the Newton Grange flight of locks, of which there are six, carries the water level down by another 50 feet. At the tail of lock number six, the level is 400 feet above mean sea level.

At mile 92 below Priest Holme Bridge the

canal passes over the River Aire on a well-proportioned adqueduct and changes course to east.

The next flight of locks commences 2 furlongs below the Aqueduct over the River Aire at mile 92. 1 furlong and is a group of five which reduces the level from 400 feet above mean sea level to 350 feet.

At mile 93 stands the village of Gargrave which has some cotton spinning mills.

At mile 94 Holme Bridge Lock reduces the level to 344 feet.

From now onwards the canal closely follows the valley of the River Aire which is on the right bank and the course, which is very winding, is mainly south easterly.

At mile 97—population 13,080—the canal enters Skipton through which it passes.

The industry of Skipton is chiefly engaged in the production of textiles such as artificial silk, cotton weaving and cotton spinning. The other industries are the manufacture of sheet lead, water pipes and gas tubing, corn milling and paper making. On the outskirts of the town there are extensive stone quarries where the manufacture of macadam and limestone dust and chippings is carried out. There are several iron foundries in the district. Alongside the towpath there are a number of industrial premises.

There are one or two rather interesting plans and documents contained in the Council's Museum referring to the Leeds and Liverpool Canal. There is for instance a "General Map of the Grand Canal from Leeds to Liverpool with its different branches carefully laid down from an accurate survey by Joseph Priestley." The map is undated but, from its appearance, was probably one of the first to be drawn of the entire length of the Canal. Also in the Museum is a leaflet entitled "An explanation of the plan of the Canal from Leeds to Liverpool exhibiting the extensive inland navigable communications it would open between the East and West Seas through the Ports of Liverpool and Hull and of the principal towns in the Counties of York, Lancaster, Lincoln and Nottingham showing the great importance of completing it to the

Public as well as to the Proprietors." This document was printed in 1788.

The first general assembly of the Canal Company, as ordered by Act of Parliament which brought it into being, was held in the Black Horse Hotel, Skipton, on 20th June, 1770. So many people attended that after the opening proceedings the meeting had to be adjourned to Skipton Castle. The first traffic on the Canal consisted of two barges which conveyed coal from Bingley to Skipton; on the arrival of these boats at Skipton there were scenes of joy accompanied by illuminations and a bonfire.

Pleasure cruising along the Canal has found increasing popularity and Skipton was recently the venue of a rally of over 40 of such craft from many parts of the country.

SKIPTON CASTLE

It is probable that the original Castle dates from the time of William the Conqueror, but this particular building lasted about one hundred years, being destroyed in 1152.

Re-building did not take place for a considerable time, although it is known that in 1309 Robert D. Clifford had made the Castle very strong.

The Castle suffered the usual chequered history common to its day and during the Civil War was for a time a Parliamentary garrison.

The gateway, flanked by two round towers is surmounted by the word "Desormais." This motto "Henceforth" aptly fits the duration of the building through the long centuries which have passed.

Distances from Skipton to surrounding countryside including the Dales :

Richmond	...	...	46 miles
Kendal	...	...	46 "
Scarborough	...	...	85 "
Ingleton	...	...	24 "
Lancaster	...	...	42 "
Harrogate	...	...	22 "
York	...	...	45 "
Blackpool	...	...	52 "

Preston	...	...	36 miles
Bradford	...	...	19 "
Leeds	...	...	26 "
Halifax	...	...	21 "
Liverpool	...	...	67 "
Manchester	...	...	42 "
Sheffield	...	...	34 "
Settle	...	...	15 "
Grassington	...	...	9 "
Pateley Bridge	...	...	17 "
Bolton Abbey	...	...	6 "
Clithero	...	...	18 "
Colne	...	...	12 "
Otley	...	...	15 "
Ilkley	...	...	10 "

Useful Information about Skipton

Hostels :

- Kettlewell (Wed. Closing Scheme 3.) Y.H.A. Hostel.
- Linton (Tues. Closing Scheme 3.) Y.H.A. Hostel.
- Malham (Mon. Closing Scheme 3.) Y.H.A. Hostel.

Hotels :

- Black Horse, High Street, Skipton. Tel. 2145.
- Brick Hall, Sheep Street, Skipton.
- Devonshire, New Market Street, Skipton.
- King's Arms, High Street, Skipton.
- Midland Hotel, Broughton Road, Skipton. Tel. 2781.
- Old George, High Street, Skipton.
- Red Lion, High Street, Skipton.
- Royal Oak, Water Street, Skipton.
- Unicorn, Keighley Road, Skipton.

Restaurants :

- The Castle Restaurant Market Place, Skipton.
- The Co-operative Cafe, Swadford Street,
- The Tea Shop, Middle Row, Skipton.
- Wendy's Cafe, Market Place, Skipton.
- Whitaker's Cafe. Market Place, Skipton.

The Itinerary and Sectional Plans of Stage Six

SKIPTON TO LEEDS

IN TWO SECTIONS

Mile 99 to 127 $\frac{1}{4}$

Section One ... Skipton to Bingley.

Horse Close Bridge, Skipton, mile 100, to Mickelthwaite Bridge, Bingley, mile 110 4 furlongs.

Section Two ... Bingley to Leeds.

Mickelthwaite Bridge to the junction with the Aire and Calder Navigation in Leeds at mile 127 $\frac{1}{4}$.

STAGE SIX — SECTION ONE

Horse Close Bridge, Skipton to Mickelthwaite Bridge, Bingley

Section Distance : 11 miles 4 furlongs.

Bridges : 28.

Minimum headroom : 8 feet.

List of Bridges : Horse Close 99 miles, Snaygill 99 miles 4 furlongs, Snaygill Store 99 miles 6 furlongs, Bradley 100 miles 4 furlongs, Hamblethorp 101 miles 1 furlong, Farnhill 101 miles 6 furlongs, Milking Hill 101 miles 7 furlongs, Redman 102 miles, Parsons 102 miles 4 furlongs, Barretts 102 miles 6 furlongs, Aqueduct over Grange Brook at 102 miles 4 furlongs, Grange 103 miles 4 furlongs, Lane House 103 miles 6 furlongs, Woodside Bridge 104 miles, Cowling 104 miles 1 furlong, Silsden 104 miles 6 furlongs, Brunthwaite 105 miles 4 furlongs, Aqueduct over Holden Beck at 105 miles 6 furlongs, Holden at 105 miles 7 furlongs, Lodge Hill 106 miles 6 furlongs, Booth's at 107 miles, Leche's Swing Bridge at 107 miles 6 furlongs, Stockbridge at 108 miles 3 furlongs, Granby 109 miles, Swine Lane 109 miles 3 furlongs, Morton 109 miles 7 furlongs, Aqueduct over Morten Beck at 110 miles, Mickelthwaite at 110 miles 4 furlongs.

Locks : Nil.

Wharves and Warehouses : Numerous on both sides.

Total distance : 110 miles 4 furlongs.

The canal now runs on a southerly course

in the steep sided Airedale Valley following closely the course of the River Aire. At mile 102 it passes through the village of Kildwick and turns to the east with open country on both banks. It crosses Grange Brook on an Aqueduct at mile 103 2 furlongs. There is a swing bridge at mile 104, Woodside, 4 furlongs onward is the town of Gilsdon on the right bank. Then the course changes again, this time to the south-east with steep cliffs on the northern side. At Booth's Swing Bridge, at mile 107, the canal enters the northern suburbs of Keighley, passing through Riddlesden. It is to be noted as being of special architectural interest, as is East Riddlesden Hall, belonging to the National Trust. A 17th century manor house and a magnificent tithe barn. This is situated 1 mile north-east of Keighley.

Although the canal is not near the industrial centre of Keighley, it is connected with it by good roads and, in the past, the effect of the coming of the canal in 1774 was to have a marked effect on the prices of goods in the shops, and at least one trader brought his goods all the way by water from London.

British Waterways maintain several excellent modern warehouses on the right of the canal, adjacent to Stockbridge Bridge. Originally built specially for the storage of raw wool, to-day, in addition large tonnages of



other commodities are accommodated. For information apply to the Depot Superintendent.

The chief industry of Keighley is the manufacture of worsted yarn. Rayon, looms, weft winding machinery, warping mills and various types of beaming, inspecting and rolling machines.

Useful Information about Keighley

British Waterways Depot Superintendent, Barr Lane, Riddlesden, Keighley.

Chamber of Trade, J. A. Madder, Esq., 4, North Street, Keighley.

Information Bureau, Keighley Public Library, North Street, Keighley.

Ministry of Labour and National Service, C. W. Vaux, Esq., Manager, Russell Street, Keighley.

British Railways Passenger Train Enquiry Office, Station Bridge, Keighley.

British Railway Goods Yard, Cavendish Street, Keighley.

Road Haulage Association Depots. Local Secretary is R. Daykin, Esq., c/o W. C. Forder Limited, Strand Garage, Main Street, Bingley.

Factory Inspector, Miss K. M. Mallins Smith, H.M. Inspector of Factories, 64, Low Street, Keighley.

Board of Trade Local Office. No local office, the nearest being the Regional Office of the Board of Trade, Pearl Chambers, East Parade, Leeds 1.

Customs and Excise Office, 4, Scott Street, Keighley.

Development Committee or Council. Keighley Borough Council, Town Clerk, Town Hall, Keighley.

Federation of British Industries Office. Federation of British Industries, East and West Ridings Region, 9, Park Place, Leeds, 1.

Hotels :

Albert Hotel, Bridge Street. Tel. 2306.

Black Bull Hotel, Main Street, Haworth. Tel.: Haworth 2249.

Bronte Guest House, Main Street, Haworth. Tel.: Haworth 2237.

Church Farm Guest House, Stanbury. Tel.: Haworth 3363.

Commercial Hotel, 16, Church Street. Tel.: 226811.

Devonshire Hotel, Church Street. Tel.: 324711.

Greengate House, Greengate. Tel.: 257711.

Ivy Bank Guest House, Haworth. Tel.: Haworth 2577.

Queen's Hotel, Station Bridge, Bradford Road. Tel. 2128.

Victoria Hotel, Cavendish Street. Tel. 4095.

Wellington Hotel, Hanover Street. Tel. 244711.

At Swine Lane Bridge, mile 109 3 furlongs, the canal leaves Keighley and maintains a south-easterly course and has wharves and factories on the right bank.

STAGE SIX — SECTION TWO

BINGLEY TO LEEDS

At mile 110.4 furlongs at Mickelthwaite Bridge, where the canal enters Bingley on the outskirts of which at mile 111 are the famous locks of Bingley Five Rise which lower the water level by 65 feet.

This staircase is followed at mile 111.4 furlongs by the Three Rise Staircase.

The total of 8 locks in a distance of 6 furlongs brings the water level down by 108 feet to 226 feet above mean sea level at Park Bridge.

Bingley has a population of 21,790 and its chief industries are wool, worsted spinning and weaving for the Bradford trade. The town is also engaged in the trades of iron founding, leather tanning, prepared joinery, paper tube making and engineering. On the outskirts of the town is a large sandstone quarry.

The road from Bradford and Leeds crosses the River Aire at Cittingley Bridge and for a short stretch the main railway line to Carlisle and the canal run on a parallel course.

Useful Information about Bingley

Hotels :

Bankfield Hotel, Bingley. Tel. 3422.

Craven Heifer Hotel, Bingley.

Midland Hotel, Bingley.

Restaurants :

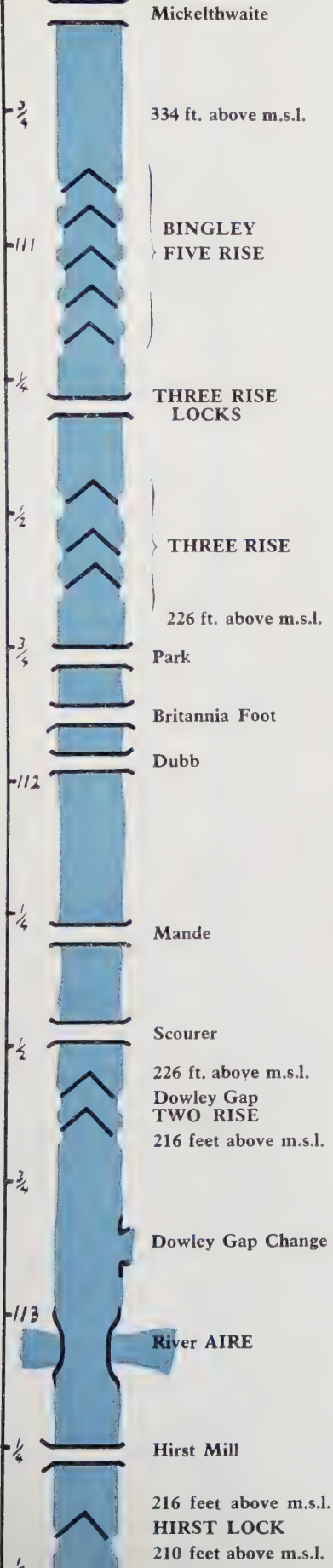
The Strand Restaurant, Bingley.

On the outskirts of Bingley just below Dawley Gap 2 rise Lock the River Aire passes under the canal through the aqueduct at mile 112.6 furlongs and enters Shipley.

BINGLEY
FIVE
RISE



*Acknowledgements to
Charles Hadfield &
Ernest Benn Ltd.*

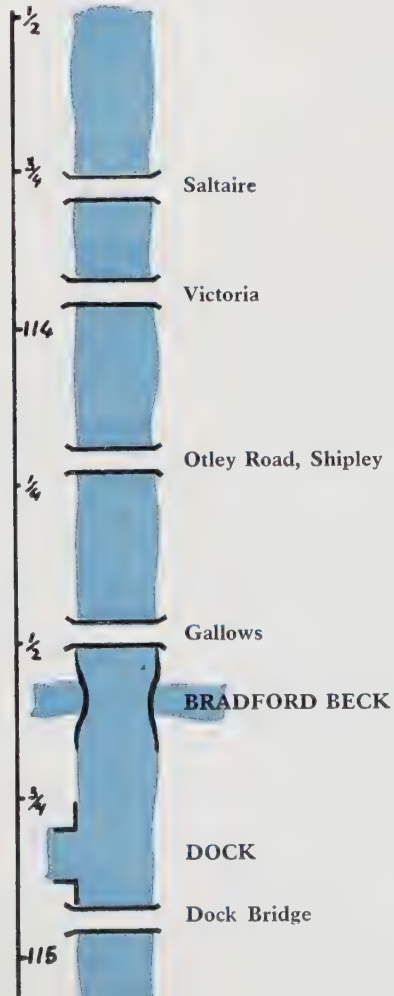


At mile 114 the canal enters Shipley town centre. The town centre is 4 miles north of Bradford. As far as the canal and its traffic is concerned Shipley serves Bradford.

Here also situated in Wharf Street and Ashley Lane, near the centre of Shipley, alongside the canal, British Waterways have extensive warehouses.

The woollen industry is the staple trade of Shipley which has a population of 32,470. There are also factories for the manufacture of textile machinery and soap. On the outskirts of the town are extensively worked stone quarries and the specially constructed cellars used for the storage of olive oil.

Included in the district is the model village of Saltaire, built by the late Sir Titus Salt in the middle of the last century to house the workpeople employed at his mill, which is still one of the largest in the world. The village is provided with a hospital, churches, schools and other public buildings. The Victoria Hall, vested in the Shipley



Council, is still the main centre for various forms of social activity and serves the whole district.

Useful Information about Shipley

British Waterways Depot Superintendent, Wharf Street, Shipley.

Hotels :

Marlowe Court, Otley Road, Guiseley.
Outwood Commercial Hotel, Outwood Lane, Horsforth, near Leeds.
Stanhope Hotel, Horsforth, near Leeds.
Sun Hotel, Market Place, Shipley.

Restaurants :

Singing Kettle Restaurant, Victoria Road, Shipley.
Sun Hotel (Restaurant), Market Place. Tel. 53519.
The Link Restaurant, Westgate, Shipley.
Woolpack Hotel (Caterers), New Road Side, Horsforth.

The canal continues a snaky but mainly easterly course in the valley of the River Aire for 4 miles to Calverley Bridge where it enters the suburbs of Leeds and at mile 118 the twin Dobson's Locks reduce the level to 177 feet above mean sea level. The railway closely follows the canal on the north side.

The road crossing at Apperley Bidge mile 118 5 furlongs is the main A.658 which leads into Bradford.

Useful Information about Bradford

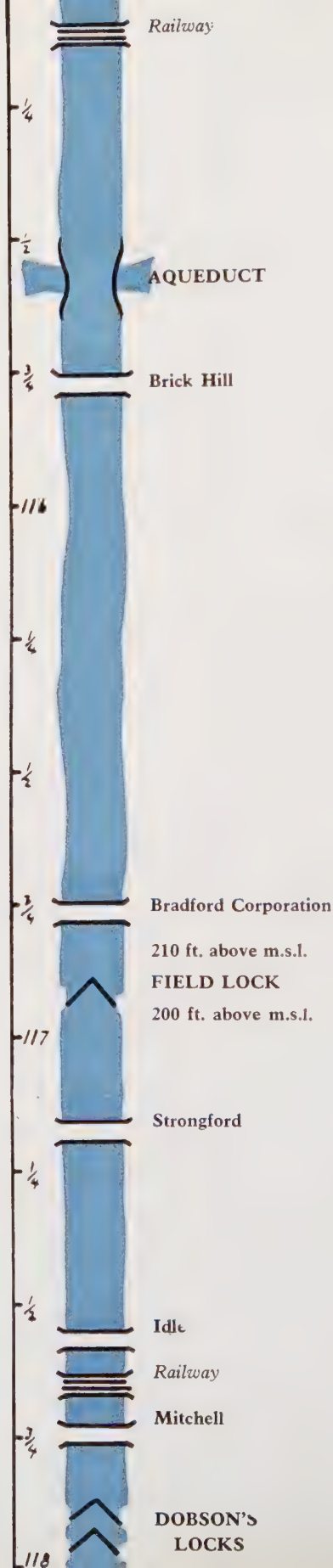
Hotels :

Alexandra Hotel, Great Horton Road. Tel. 23530.
Betty's Darnley Street. Tel. 20211.
Carlton Hotel, Parkfield Road, Manningham. Tel. 428741.
Eldon Lodge Hotel, Eldon Place. Tel. 233801.
Midland Hotel, Forster Square. Tel. 25663.
New Talbot Hotel, Kirkgate. Tel. 26411.
Park Hotel, Oak Avenue, Manningham. Tel. 429711.
Queen Hotel, Bridge Street. Tel. 216371.
Victoria Hotel, Bridge Street. Tel. 28706.
Wedgewood Private Hotel, Claremont. Tel. 28381.

Restaurants :

The Buttery, Market Street. Tel.: Bradford 291021.

One hundred and twenty-four



S. Hall, Secretary, Bradford Chamber of Commerce
Inc. Commerce House, Cheapside, Bradford, 1.
F. A. Lapish, Secretary, Chamber of Trade, 17,
Little Horton Lane, Bradford, 5.

Ministry of Labour and National Service, Clifford
Street, Bradford.

British Railways Passenger Stations :

Forster Square.
Exchange.

British Railways Goods Yards :

Adolphus Street.
Bridge Street.
City Road.
Valley Road.

British Road Services, 181, Thornton Road,
Bradford, 1.

H.M. Inspector of Factories, Britannia House,
Bradford, 1.

H.M. Customs and Excise Office, Britannia House,
Bradford, 1.

Federation of British Industries, Lloyds Bank
Chambers, Hustlergate, Bradford, 1.

At mile 122.6 furlongs the 3 rise locks of
Newlay lower the water level from 177 feet to
153 feet above mean sea level at Forge 3 rise
locks at mile 123.2 furlongs take the waterway
down to 129 feet.

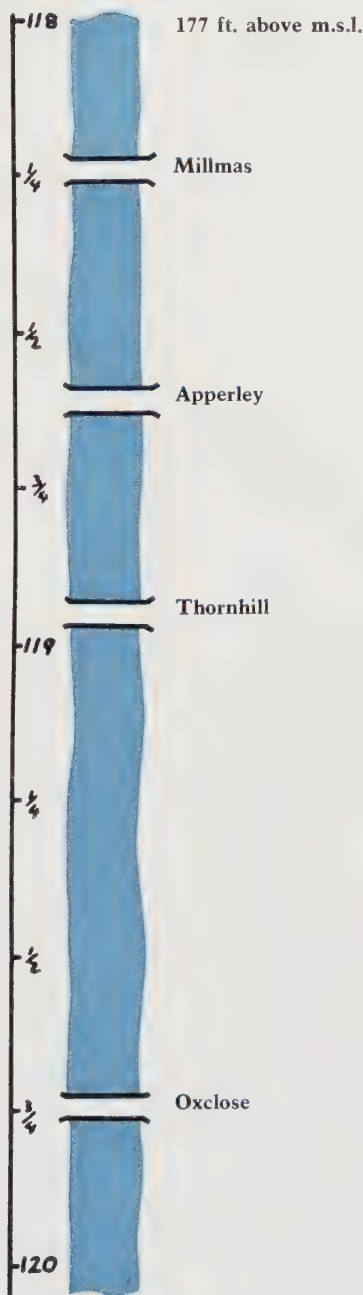
The single lock at Kirkstall at mile 123.5 fur-
longs brings the level down to 121 feet above
mean sea level and is the last lock before the
group in the City of Leeds.

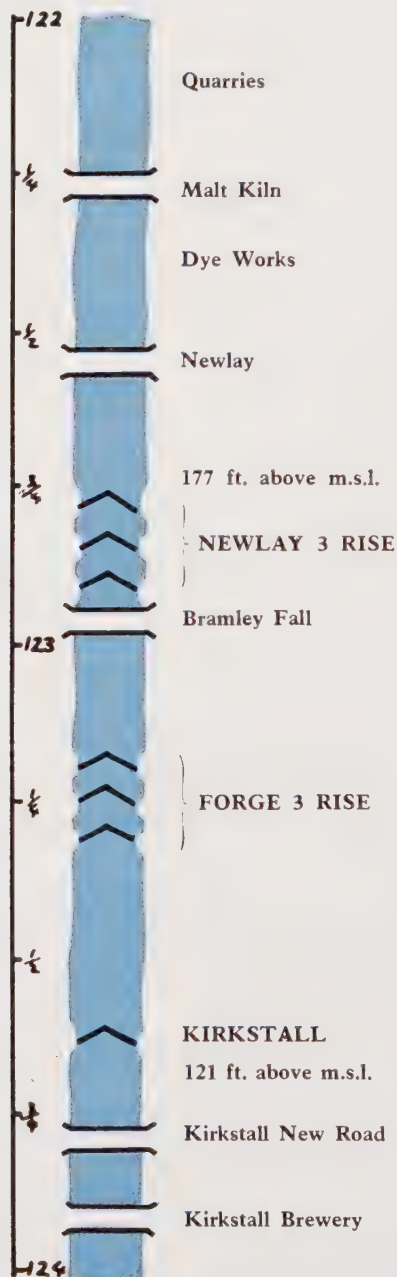
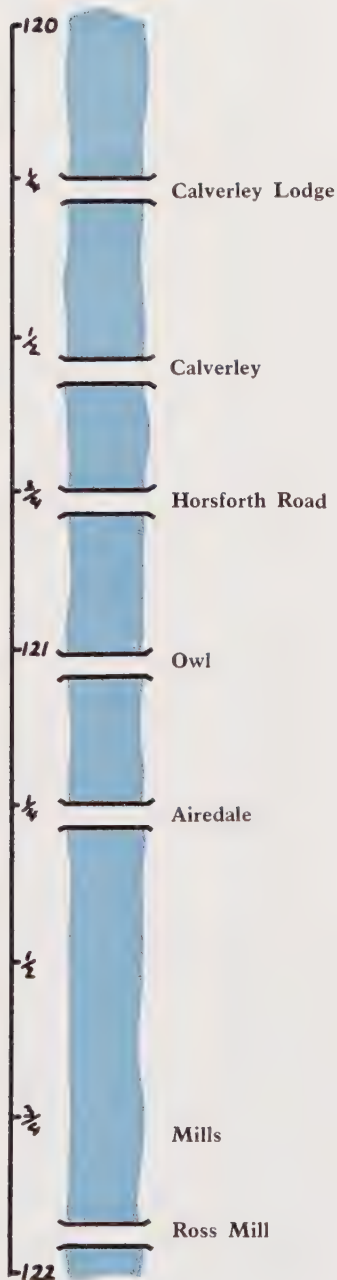
LEEDS

The City of Leeds has been described as the
industrial capital of the North. It is of very
ancient origin, founded by the powerful Celtic
Tribe of Brigantes, and named by the Romans
"Loidis" when the Legions occupied it as a camp
and a settlement.

When the survey was carried out for the Domes-
day Book the value was given at a few pounds, but
in those days many of the districts, which are now
included in the City of Leeds, were excluded and
separately mentioned and valued.

As early as the 13th Century a Charter was given
to the inhabitants of Leeds, but it was not until
the end of the 19th Century that Queen Victoria
conferred a Royal Charter ordering the Chief
Magistrate of the City to be styled the Lord Mayor
of Leeds.





The modern city has a population of 507,400 citizens. It is the centre of the great clothing, wool, textiles and engineering industries in the West Riding of Yorkshire.

Situated on the River Aire the City is on the direct inland waterway line of communication between the Mersey in the west, and the Humber in the east, for it is in the centre of Leeds that the Leeds and Liverpool Canal connects with the Aire and Calder Navigation leading to Hull and the other Humber ports.

There is no doubt that Leeds derived its prosperity in the era of the Industrial Revolution and the canal era from the vision of pioneers, including the Duke of Bridgewater and James Brindley, when they developed the canal communications to provide the City with such an excellent inland waterway service which remains to-day as one of the finest transport services operating for the benefit of industry in Leeds.

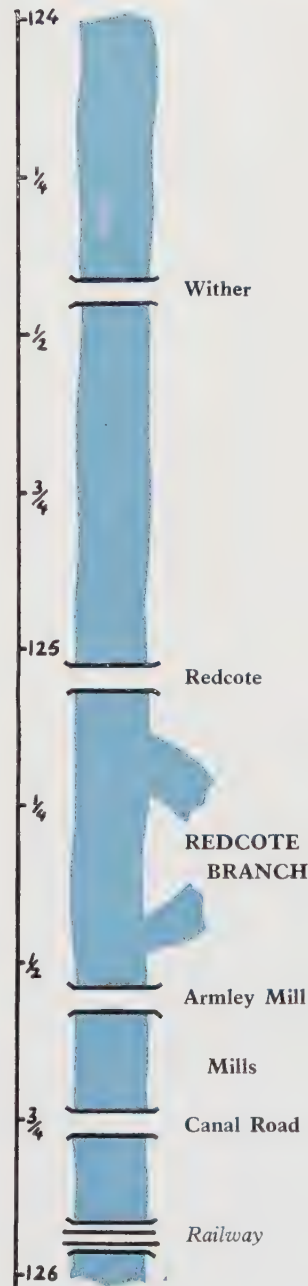
Local Government is administered in the City by a Council presided over by the Lord Mayor, with 28 City Aldermen and 84 Councillors. Under the guidance of the Council the development of the industrial and housing estates has been carefully planned since 1945 and modern Leeds is still being developed with excellent amenities for factory sites and the comfortable housing of the population.

Railway communications to all parts of the British Isles extend from the city centre. There are two stations: Leeds City and City Square, on the main lines to London-Scotland-Liverpool-Manchester-Hull-and Newcastle. Leeds Central in Wellington Street also serves London, the Lancashire coast and East Anglia.

Leeds is the centre of passenger road service traffic on the main trunk routes to London-Scotland, and the east and west coasts with excellent bus and coach services. Suburban and city traffic is handled by the efficient bus services of the City Transport Department.

Leeds is also a big distributing centre for merchandise carried by road transport. The roads of Leeds have been modernised, carefully planned and the traffic is controlled to ensure expeditious circulation.

The City is looked upon by industrialists and business men as one of the principal manufacturing cities in the Kingdom and in order to facilitate development and improvement there is an Industrial Relations Department.



At mile 127.2 furlongs in the centre of the City of Leeds is the end of the Liverpool to Leeds Canal at 100 feet above mean sea level. At this point it joins the Aire and Calder navigation which are under the control and jurisdiction of the North Eastern Division of British Waterways.

Useful Information about Leeds

Full particulars of the Aire and Calder Navigation and the canals in the North Eastern Division of British Transport Waterways may be obtained from the Divisional Manager, T. H. Thornton, Esq., A.M.Inst.T., P.O. Box No. 9, 1, Dock Street, Leeds, 1. Telephone numbers 2-0957 (3 lines), 2-0950, 3-2806. Telegrams: Britwater, Leeds.

Board of Trade, Pearl Chambers, East Parade, Leeds, 1.

H.M. Customs and Excise, Century House, South Parade, Leeds, 1.

Export Credits Guarantee Department, Cabinet Chambers, Lower Basinghall Street, Leeds, 1.

Ministry of Labour and National Service, Coronet House, Queen Street, Leeds, 2.

British Railways, City Station, Leeds, 1.

Central Information Bureau, Central Library, Leeds, 1.

Chamber of Commerce, National Employers' House, Quebec Street, Leeds, 1.

Federation of British Industries, 71, Albion Street, Leeds, 1.

Hotels

Barrington Court Hotel, 20, Blenheim Terrace. Tel. 23616.

Faversham Hotel, Springfield Mount. Tel. 28817.

Great Northern, Wellington Street. Tel. 30431.

Griffin Hotel. Tel. 22966.

Golden Lion, Lower Briggate. Tel. 3-3335.

Imperial, Briggate. Tel. 2-0429.

Lane Hotel, St. Michael's Lane. Tel. 55131.

Metropole, King's Street. Tel. 20841.

Mount Hotel, Clarendon Road. Tel. 26787.

Parkway, Otley Road. Tel. 73488.

Queen's City Square. Tel. 31323.

Webton Court, Chapel Allerton. Tel. 43025.

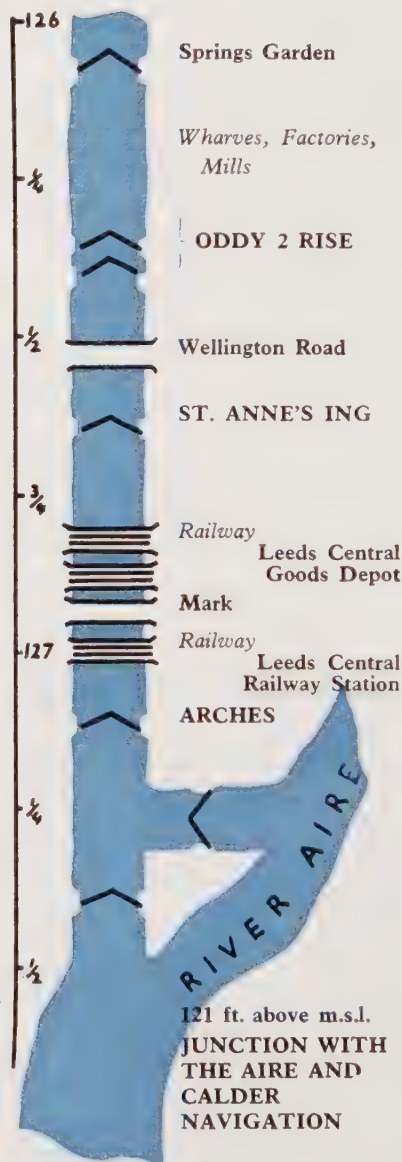
Restaurants

Jacomelli's, 52, Boar Lane. Tel.: Leeds 26778.

Powolny's, Bond Street. Tel.: Leeds 24769.

Turk's Head, Briggate. Tel. 23950.

One hundred and twenty-eight





HAREWOOD HOUSE.

[Copyright Mr. Alec J. Walker.

Historic houses of special interest to Leeds visitors are :—

TEMPLE NEWSAM — Tudor-Jacobean house, birthplace of Lord Darnley, and is 5 miles east of Leeds. It is open from May to September.

HAREWOOD HOUSE AND PARK is 7 miles south of Harrogate and 8 miles north

of Leeds on the Leeds-Harrogate Road (A61) at the junction with A659. It is the home of H.R.H. The Princess Royal and the Earl of Harewood. It is open April to September, Wednesdays and Thursdays 10-6; Sundays 12-6; Bank Holidays, Mondays and Tuesdays 10-6; October—Sundays 12-5. Admission 2/6, Children 1/3; Park and Gardens 1/—, Children 6d.

THE TERRACE OF HAREWOOD HOUSE.

[Copyright Mr. Alec J. Walker.





HOW A CANAL WORKS

Some people believe that a canal is replenished from hidden underground springs like a river. This is not so, it is fed, generally, from reservoirs, usually on the summit, and from streams along its course, and in fact the maintenance of the correct depth of water is one of the engineer's greatest tasks. Canal working can be arranged into three classes, all of which are inter-dependent, and together tell the whole story of a canal as a usable waterway.

1. The maintenance of water at the correct level.
2. The upkeep of the banks in good order.
3. The preservation of the locks.

It will be obvious that failure at any one of these points would render a canal unusable for traffic.

The Maintenance of Water at the Correct Level

Canals, unlike rivers, go up and down hill, and it is therefore necessary to put water into the canal at the higher points to run down to the lower levels. The rise and fall of water in each lock has to be carefully controlled otherwise sections of the canal would dry up. Each canal starts at the level of the particular river or dock which it serves, and where it does not flow through level country it rises through a system of locks to the summit and then descends to join another river or port. As the boats pass up and down through the various locks, they each draw a lock of water from the summit. The water maintenance engineers have to provide an adequate supply of water to the summit to replenish the level and to allow the traffic to move freely through the canal. A considerable amount of water flows in and out of a lock each time it is used. The average Leeds and Liverpool canal lock

contains about 80,000 gallons. This amount of water would last the average household, using 100 gallons of water a day, nearly two years. The four main reservoirs for the Leeds and Liverpool Canal have a total capacity of over one hundred and eighty-eight million cubic feet of water. The exact amount of water to be piped has to be carefully considered—too much will overflow and burst the banks, too little will cause the boats to run aground. The intake into the canal is regulated by the pumping system, and the outflow by weirs and sluice gates. In this way it is possible to allow for periods of extended drought, heavy rainfall or melting snow and ice.

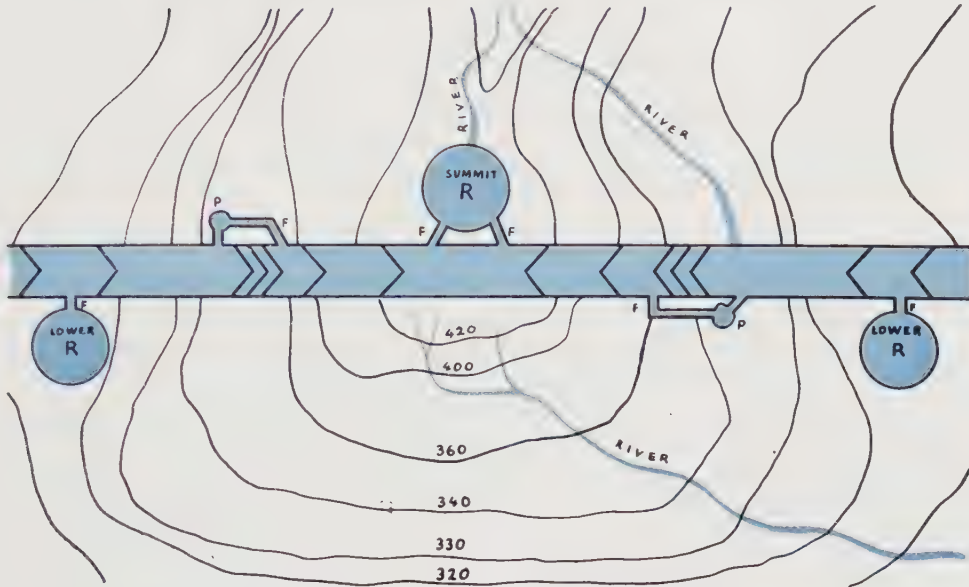
The conservation and control of the water is the work of the water maintenance engineers and the lock keepers are responsible for preventing flooding. The engineers think in terms of a reservoir of thousands of locks of water. The working of a canal is calculated in terms of the number of boats which empty the locks and the amount of water which must be replaced every day.

Several methods are used to conserve water. Some locks have side-ponds connected by sluices which have draw-paddles and when a boat going down hill enters a lock it discharges half the water into the side pond as the level in the lock chamber descends. When a boat going up hill enters the lock the water in the side pond is returned to the lock before the water from the upper pond is used. This method conserves half a lock of water. When locks are paired as in the area of the Trent and Mersey Canal, the second lock acts as a side pond. Another method is to pump water from the lower pond to the upper pond after the passage of a descending boat.

The Upkeep of the Banks in Good Order

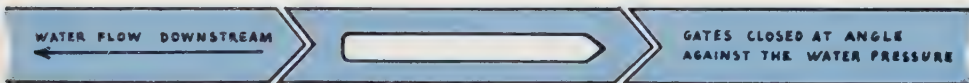
If the banks break and fall in to the

How the Water Level is Maintained



KEY: R - Reservoir. > - Lock Gates facing waterflow. P - Pumps. F - Feeders.
Riv. - Small rivers or streams. 400 - Contours.

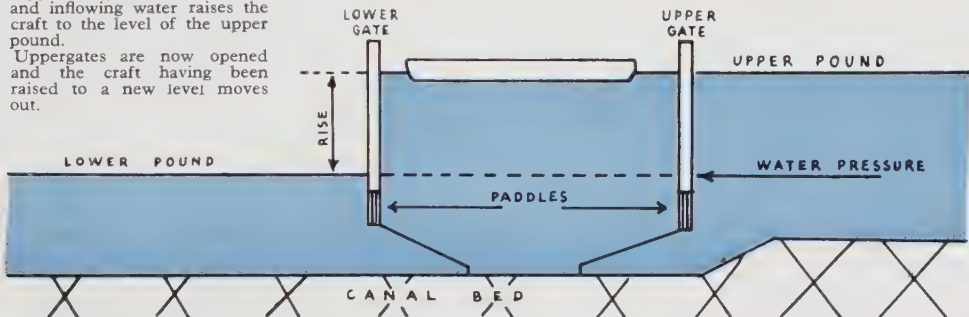
How a Lock Works



Method of Operation

1. The uppergates and paddles are closed against the downstream water flow.
2. The lower gates are opened and the craft enters. The lower gates and paddles are closed locking in the craft.
3. Uppergate paddles are opened and inflowing water raises the craft to the level of the upper pound.
4. Uppergates are now opened and the craft having been raised to a new level moves out.

Craft Moving Upstream



water the canal soon silts up and only unceasing vigilance can keep the traffic moving smoothly. Men are constantly employed in maintaining the canal banks, towpaths and locks. The boatmen also pass on reports of silting. In bad cases dredging is necessary and this is an operation requiring special knowledge and skill and is very expensive. Unlike dredging in a river,

where silt can be scooped out regardless of depth, a canal has a waterproof bed known as "clay puddling" and careless dredging would soon cut into this. Before dredging can begin the required depth has to be known and only the mud and silt removed from the top of the clay puddling. Systematic dredging needs a great deal of modern mechanical equipment, together with the



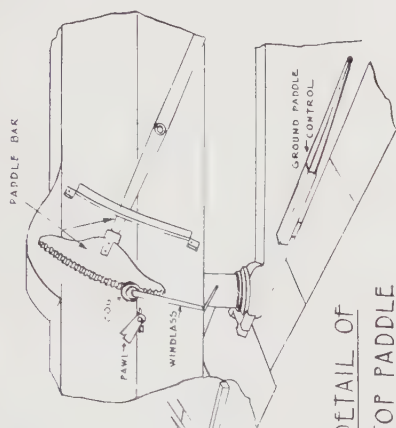
BANK PROTECTION OF A STRETCH OF CANAL NEAR TRING.

BELOW, SHOWING CONCRETE PILES IN PLACE.

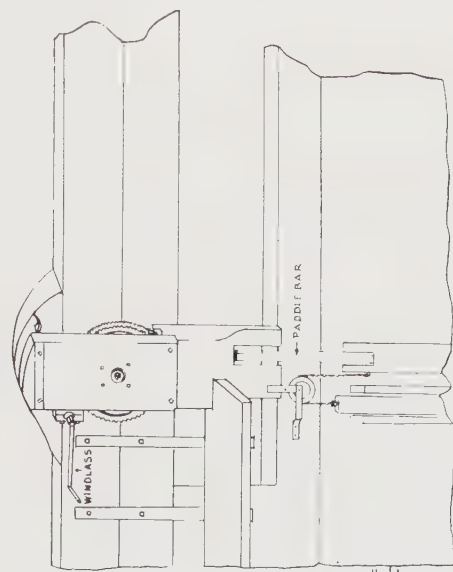
Photo: "Municipal Journal."



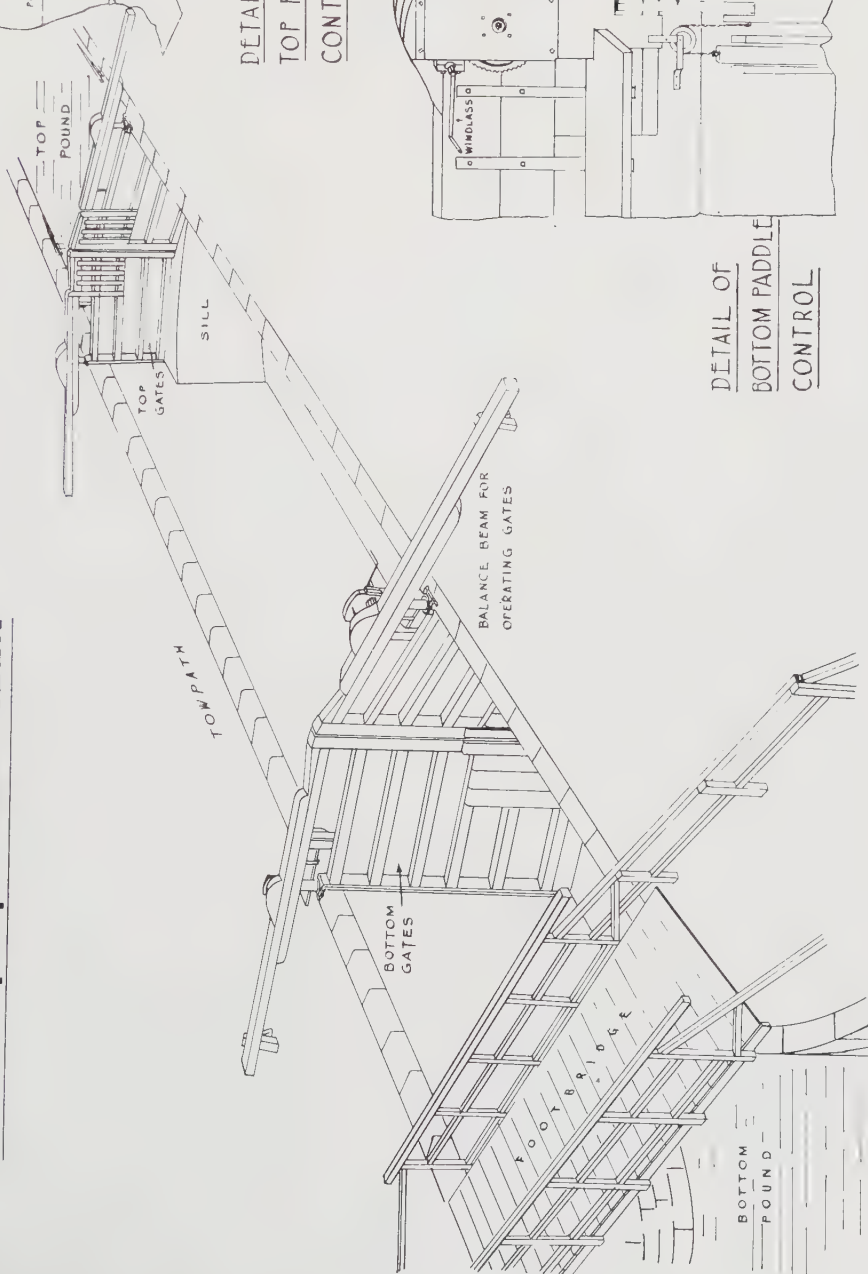
BROAD GAUGE CANAL LOCK



DETAIL OF
TOP PADDLE
CONTROL



DETAIL OF
BOTTOM PADDLE
CONTROL



necessary labour force. A fleet of boats is also needed to carry away the mud to a suitable ground maybe some miles away.

One of the major works now in hand is the replacing of earth banks by concrete walls or steel interlocking piles, but it is a long and expensive task. Sometimes there is also a concrete coping to form a continuous bank to the waterway. A great deal of labour and mechanical pile driving is necessary. Once the work has been done the speed of boats can be increased and the chances of serious bank erosion is reduced. Occasionally, tunnels must be repaired and re-lined, locks cleaned and gates and sluices repaired and replaced. This is a difficult operation which closes that particular stretch of waterway.

A new cheap and effective way of preventing bank erosion by means of a pile made of reinforced concrete strong enough to be driven without damage into a ballast subsoil is now being tried. Already several miles of canal bank, along the Leeds and Liverpool and other canals are protected by this method.

The Preservation of the Lock System

Locks are an essential and outstanding feature of inland waterways. Their function is to raise or lower the craft as the waterway passes up or down hill. This operation is achieved by altering the water level in the lock. The lock itself is an oblong chamber which has gates at each end. These double gates are arranged to close at an angle to face the flow and pressure of the water, this keeps the gates closed and prevents leakage.

Set in each gate, or in the ground beside the gate, are paddles which when opened (or drawn) allow water to pass into or out of the lock, and when closed (or dropped) shut off the flow of water. These paddles are connected to a verticle toothed paddle bar which projects above the gate. This is raised or lowered by turning a handle (or windlass), which may be removable or, as on the Leeds and Liverpool, fixed, and which turns a cog which engages on the teeth of the paddle bar.

The method of lock operation for a craft going up hill is as follows :—

1. The upper gates are shut, the lock emptied of water if it is not already empty, and the upper paddles dropped.
2. The lower gates are opened and the craft enters the lock. The lower gates are then closed and the paddles dropped. Make sure the paddle bars are as far down as they will go.
3. The paddles of the upper gates are opened and the water flows into the lock raising the boat until no more water flows into the lock because it it has reached the level of the upper pound. The upper gates are opened (they will not open until the water is within an inch of being level) and the craft having been raised to a new level moves out.
4. Close the gates and make a special point of seeing that the paddles are firmly shut down to prevent water wastage.

The proceedure for navigating downhill is, of course, the reverse.

The length of water between locks is called a pound. On many canals there are long pounds over which the craft move at an average of four to six knots, but in cases where the rise in contours is sharp the pounds are short and there are flights of locks from one level to another.

Usually each lock is separated from the next by a short pound, but when the hill is steep any number of locks from two to five may be built as a single structure, the top gate of one lock forming the bottom gate of the next. These are known as staircase locks or rises.

One notable example is Bingley Five Rise on the Leeds and Liverpool Canal, in which there are five lock chambers raising the level by a hundred feet in a matter of three furlongs. At the highest point this canal is raised over the Pennine Chain at a level of 487 feet, which is over 80 feet higher than England's tallest spire—Salisbury Cathedral.

Important and busy locks are manned by lock keepers, but over many pounds in the open country the boatmen and crews operate the locks themselves. The mean rise and fall of individual locks is between eight and twelve feet.

THE MEN OF THE WATERWAYS

The men and their wives and families serving afloat on the Inland Waterways of Britain to-day are for the major part descendants of the original families who by their hard work and loyalty founded the prosperous era of the canals.

One of the pioneers for better living conditions on canal boats was George Smith, whose labours resulted in the 1877 Act whereby overcrowding is, to some extent avoided.

Apart from these boatmen, there are a host of other workers.

The number of maintenance men occupied on the Leeds and Liverpool Canal is approximately 300. Their jobs include:—

- a. The dredging of the channel.
- b. Bank protection. This is a vital operation and with the implementation of new schemes likely to increase in the volume of work.
- c. Lock operation and lock gate repairs.
- d. Bridge and tunnel repairs.
- e. General maintenance of the canal. Under this phrase falls a multitude of tasks and when it is realised that the Leeds and Liverpool Canal is 127 miles long with a branch to Leigh to join up with the Bridgewater Canal of another seven miles, it will be seen that there must be a multitude of tasks to be done regularly and efficiently in order to keep the Canal in good navigable order.

Those who are newcomers to this attractive life are trained by the old hands not only to be good boatmen and steerers but to follow the traditions of life on the waterways. All the men and women who serve England's liquid highways to-day are playing a great part in the economic survival of an island in which every method of transport is

of vital importance: they serve loyally and well in a calling which gives them an open-air and peaceful life.

There are a wide variety of canal craft of all shapes, sizes and uses, and the men of the waterways act as skippers, boatmen and steerers in a fleet which is as divergent as our merchant navy. It is mostly in the narrow boats that the family life and the old traditions of the canals are maintained. The narrow boat and its attendant butty are known as a family-pair because they are often worked by the boatman and his wife and family. This pair of boats is the family home and although the cabins are not large they are arranged to provide comfort. It is the pride of every boatman and his wife to follow the old customs of decorating their homes with gay colours and bright pictures with plenty of brightly polished brass and shining laced china plates which made the scenes on the canals so artistic and attractive as the boats pass by. Everything in the home is spotlessly clean, brass polished and all utensils tidily in their place.

This account does not include those men who are not direct employees of British Waterways, but who nevertheless play their part indirectly in the facilities offered by the Inland Waterways system. These must include the dockers at the ports, cranemen, executives in the offices controlling the running of boats and others.

Women are not usually employed on the Leeds and Liverpool Canal, although two of the British Waterways carrying fleet are operated by a captain and his wife. It cannot be said in this particular area that there are operating staff who could be classified as a specific type of canal folk. No children are employed on this Canal so the question of educational facilities and arrangements on their behalf does not arise, although in some areas special arrangements have to be made.



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HOLIDAYS ON CANALS

The inland waterways of this country meander slowly through the pleasant green fields and woods and the black but rich industrial heart of England.

British Waterways issue some excellent Inland Cruising Booklets, which are exceedingly well illustrated.

PUBLISHED

- No. 1—Llangollen Canal
- No. 2—Trent Waterway
(*Shardlow to Gainsborough*)
- No. 3—Lee and Stort Navigations
(*Limehouse to Hertford and Bishop's Stortford*)
- No. 4—Staffordshire and Worcestershire Canal
(*Autherley Junction to Stourport*)
- No. 5—Shropshire Union Canal

TO BE PUBLISHED

- Severn Waterway
(*Gloucester to Stourport*)
- Macclesfield and Peak Forest Canals
- Oxford Canal
(*Napton to Oxford*)
- Fosdyke and Witham Navigations
- Grand Union Canal :
Part I
- Regent's Canal Dock and
Brentford to Braunston

Part II

Norton Junction to Langley Mill

Part III

Midland Section

Braunston to Birmingham
and adjoining Canals

Worcester and Birmingham Canal

To those who seek a peaceful and unusual holiday, the canals and rivers are worth exploring, many have done so and one or two have written about their trips in a noteworthy and interesting manner. For example, L. T. C. Rolt in his book "Narrow Boat" (Eyre and Spottiswoode) tells of his 400-mile voyage through the Midland waterways; another useful book, especially as it deals in part with the Leeds and Liverpool Canal, is "Sailing through England" by John Seymour, this also is an Eyre and Spottiswoode publication. It is a fact that there are about 1,600 miles of waterways open to navigation and, in most cases, all that is necessary is to obtain your craft, apply for a licence and away. The cost of a pleasure craft licence varies according to the size of the craft and duration of the licence, e.g., for a powered craft of 25 feet or under the annual licence cost is £8.

Perhaps the best available book for reference is "Inland Waterways of Great Britain and Northern Ireland" by Lewis A. Edwards (Imray, Laurie, Norie and Wilson,

One hundred and thirty-seven



Ltd.). This publication is very comprehensive, but the reader looking for a simpler and helpful book could do no better than obtain "Know Your Waterways" by Robert Ackman (Coram Publishers Ltd.), which is written especially for those holidaying on canals and who need guidance. A very useful book is "Introducing Canals" by Charles Hadfield published by Ernest Benn Ltd. It contains some excellent suggestions for holidaymakers, including the best trips and how to operate the locks. He recommends the stretch between Bingley to Foulridge near Colne on the Leeds and Liverpool Canal as a good holiday area. It also contains a gazetteer and index of canals.

Probably the canals of Cheshire, Shropshire and the Midlands are the best for holidays, but claims are also entered for the Llangollen canal and the Leeds and Liverpool. The busy commercial routes are not recommended.

There is not a very extensive canal literature and it is not within the scope of this book to give comprehensive guidance to all those who wish to go afloat, but the following books will be helpful; "The Inland Waterways of England" by L. T. C. Rolt (George Allen and Unwin), "British Canals" by Charles Hadfield (Phoenix House), "The Canals of Southern England" by Charles Hadfield (Phoenix House) and "Canals of England" by Eric de Mare' (Architectural Press). In addition British Waterways publish inland cruising booklets, leaflets and maps which provide valuable information for holidaymakers.

There are a number of boat hiring firms who specialise in catering for the needs of canal holidaymakers, and British Waterways are also operating a number of luxury pleasure cruisers for hire. The craft in general use are motor cruisers which are fully equipped with cooking apparatus, electric light, etc., and vary in length and beam according to the number of cabins and berths.

Boats not exceeding 70 feet in length and 7 feet beam can be used on the narrow canals and are capable of negotiating all the locks, but they must be not more than 62



DAY CRUISERS

feet long to pass through the locks on the Leeds and Liverpool. Usually the boat hirers charges include the payment of tolls to British Waterways, but the boat hirer will be able to advise on this and any other relevant matters.

On some canals there are special craft such as the newly commissioned "Water Rambler." This is a luxury canal cruiser and can take 20 passengers for a five-day cruise from Oxford to Birmingham with visits to Oxford, Sulgrave Manor, Stratford-on-Avon, the Shakespeare country, Leamington Spa and Warwick Castle, at a cost of £27 10s. per head inclusive. The tourists spend their nights in hotels en-route and the

cost includes transport and "all found." In some areas there are day trips on canals and, on the Regent's Canal in London a trip of an hour and a half through Regent's Park, the Zoo and parts of the City.

There is a pleasant little leaflet entitled "Pleasure Cruising on British Waterways" which deals with the 'Heart of England' Cruises, 'Water' Class Hire Cruisers and Day Cruisers for parties. This may be obtained from any of the Divisional Offices of British Waterways or from their Headquarters, 163, Euston Road, London, N.W.1. Tel.: Euston 4051.

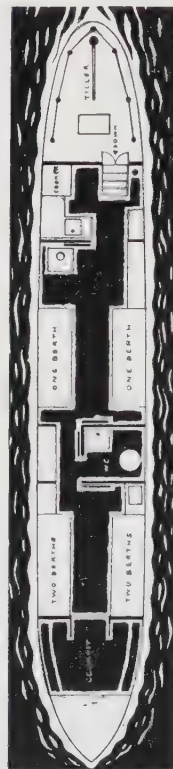
A large scale map of British Waterways is available at five shillings post free.

"HEART OF
ENGLAND
CRUISES."



An illustrated brochure dealing with the "Heart of England" cruises may be obtained from the Divisional Traffic Officer, South Eastern Division, 'Willow Grange,' Church Road, Watford, Herts. Telephone : Watford 6422, or Thos. Cook and Sons Ltd., and other leading travel agencies or the Tourist Offices of British Railways.

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Also at: CARDIFF, GLASGOW, NEWCASTLE-ON-TYNE AND SOUTHAMPTON

Canoeing on Canals

This is a very old pastime which is becoming increasingly popular. There is no needs to use the locks for, with a lightweight canoe, portage is easy. There are several useful books such as "Canoeing" by William Bliss (Methuen & Co. Ltd.) and a postcard to the Central Council of Physical Recreation, 6, Bedford Square, London, for their Book List will give a splendid selection of publications. The C.C.P.R. also arrange training courses for novices and more advanced canoeists and will always be glad to supply particulars. There are one or two associations which specialise in this form of sport. They are the Canoe-Camping Club Section of The Camping Club of Great Britain and Ireland, Hon. Secretary, Rodney W. Baker, Esq., 35, Old Kent Road, London, S.E.1. Tel.: HOP 1695/6, and the British Canoe Union. Home Touring Enquiries: R. F. Tyas, 19, Pine Hill, Epsom, Surrey.

Pleasure Craft on the Leeds and Liverpool Canal

Many stretches of this waterway pass through delightful country and its peculiar charm is the way in which the glorious views of the Pennine Hills and the Yorkshire Moors may be seen. In the North Western Division alone there are over 1,200 pleasure craft licences issued annually. It is a point

to be noted that, from the canals, the countryside appears much the same as when the waterways were first cut nearly 200 years ago.

Full information about the Commission's Waterways that are open to pleasure craft and every assistance will be obtained from the Divisional Officers. In the case of the Leeds and Liverpool Canal, application should be made to the Divisional Traffic Officer, North Western Division, British Waterways, Lime Street Chambers, Liverpool, 1. Telephone: Liverpool 7030.

There are several boat repair yards on the waterways and the following addresses may be helpful:—

Leeds and Liverpool Canal (Liverpool)

James Mayor & Co. Ltd., Boat Yard,
Tarleton, Lancs.
British Waterways, Wigan.
John Parke & Sons Limited, 23, Syren
Street, Liverpool. Tel.: Bootle 1763.
G. & G. Crooke, Riley Green.

Leeds and Liverpool Canal (Yorkshire)

Bradford Boat Services Limited, The Boat
Yard, Apperley Bridge, Yorkshire.
T. & G. Hodson, Boat Yard, Blackburn.
L. E. Hainsworth, Richmond Road, Shipley.
Tel.: Shipley 55306.

PLEASURE BOATS ON THE LEEDS AND LIVERPOOL CANAL.

Photo: A. C. K. Ware.



On the Lydiate length of the Canal will be found the Mersey Boat Club, Chairman, J. Daly, Esq., 1, Sandy Lane, Lydiate. The Inland Waterways Association, 35, Great James Street, London, W.C.1, publish a useful list of yards and navigation tips.

There are some other organisations which have an interest in canals for holiday purposes and these are :—

a. Youth Hostel Associations :—Merseyside Region, Y.H.A. Secretary, 93a, Scotland Road, Liverpool, 3. North 2391.

West Riding, Y.H.A. Secretary, Thorpe Chambers, Hustlergate, Bradford, 1. Bradford 32047.

b. The Co-operative Travel Service, 1, Balloon Street, Manchester, 4.

c. The Holiday Fellowship :

Liverpool : Hon. Secretary, W. Jones, Esq., 7, Earlston Road, Wallasey, Cheshire.

Leeds : Hon. Secretary, Miss C. Pollitt, 29, Norman Row, Leeds, 5.

It is a good plan to enquire of your boatman or at the Divisional Headquarters of any special rules that may apply to the particular canal you wish to use.

The Association of Pleasure Craft Operators, Braunston, Rugby, Warwickshire. Tel. 325.

A.P.C.O. was formed early in 1954, and is recognised by the British Transport Commission as the official negotiating body for the inland waterways holiday industry. A.P.C.O. is a trade association in the best sense of that phrase ; it links together in friendly co-operation reputable firms offering inland waterway holidays, enabling them to exchange information and advice, co-ordinate and improve their business activities and thus offer, in turn, better holidays.

These firms offer motor cruisers for hire without crew :

Canal Cruising Co. Ltd., Stone, Staffs.

Canal Pleasurecraft (Stourport) Ltd., Stourport, Worcs.

G. E. Cartwright (Boats) Ltd., The Boatyard, Castle Boulevard, Nottingham.

Coronation Canal Cruisers, 62, Heath Avenue, Newcastle, Staffs.

Constellation Cruises, Mount Vernon, Higher Poynton, Cheshire.

Dobson's, Boat Builders, Stapenhill, Burton-on-Trent.

Dean's Pleasure Boats, Rowton Bridge, Christleton, Chester.

Floating Enterprise, 1, Chapel Street, Uxbridge, Middlesex.

John Gould (Waterways) Ltd., Newbury Lock, Newbury, Berks.

Holidays Afloat, Talbot Wharf, Market Drayton, Salop.

Inland Hire Cruisers Ltd., Rowton Bridge, Christleton, Chester.

Inland Waterway Cruising Co., Braunston, Rugby, Warwickshire.

"Maid" Line Cruisers Ltd., Ferry Yacht Station, Thames Ditton, Surrey.

Ernest Thomas (Walsall) Ltd., Old Birchills Wharf, Walsall, Staffs.

Trent Hire Cruisers Ltd., 4, Rolleston Drive, Arnold, Notts.

Sloan's New-Way Holidays, Brownsover Wharf, Rugby, Warwickshire.

These firms offer cruises with crew and meals provided :

Inland Waterway Cruising Co., Braunston, Rugby, Warwickshire.

Sloan's New-Way Holidays, Brownsover Wharf, Rugby, Warwickshire.

Waterborne Tours, Canal Wharf, Penkridge, Staffs.

These Firms offer daily excursions with crew provided :

John James, "Jason," c/o Toll Office, Delamere Terrace, W.2.

Floating Enterprise, 1, Chapel Street, Uxbridge, Middx.

John Gould (Waterways) Ltd., Newbury Lock, Newbury, Berks.

Useful Navigation Tips

1. A working boat bearing a load has precedence over a pleasure boat at a lock and if it is deeply laden has to keep to the deep channel, the steerer may indicate the side on which he wants you to pass. He has the right of channel and precedence at bridges. The headroom at bridges is sometimes deceptive and it should be remembered that the deeper channel is in the middle of the waterway.
2. When passing another craft, the rule is "Port to Port" or keep to the right (opposite to roads), but this is occasionally varied, and when passing through certain tunnels.
3. A boat drawn by a horse or tractor has the right of the towpath.
4. When mooring avoid sharp corners or where the view is obstructed to oncoming vessels. Try and use a mooring ring. When mooring for a considerable period, you may be charged a fee. Never, under any circumstances, moor in such a way as to obstruct a lock working.
5. On a busy waterway show a riding light at night.
6. The deep water channel is usually on the outside of a bend and in the centre of a straight pound.
7. It is a good plan to find out before commencing a trip which locks on your canal are manned and those you will have to operate. Make sure you know how to operate a lock ; where necessary carry a windlass to raise the paddles.
8. Do not go so fast as to cause a bow wave, this causes bank erosion.
9. When passing boats that are moored, slacken speed.
10. During periods of national holidays, certain sections of canals are sometimes closed to traffic to enable essential

repairs to be carried out. Notices of the pounds that will be closed are sent to all traffic and control offices and all professional boatmen. If you intend to use the canal during these periods enquire what the position is before setting out.

For sixpence, purchase "I-Spy, Boats and Inland Waterways," No. 14, in the well known News Chronicle series. This will be found to have some very interesting sketches especially of the paintings (castles and roses) that are sometimes to be found on the narrow boats. No. 13 in this series "Ships and Harbours," is interesting, in that on pages 24-5 will be found a simple explanation and chart of Navigation Lights.

On the Leeds and Liverpool Canal the only really heavy stretch of locks is through Wigan, but although the canal will take you over the Pennines, the locks have been concentrated to give long pounds between. In the main the canal hides the industrialism of the towns through which it passes. When Keighley is reached it should be a point of honour to visit nearby Haworth, the home of the Brontes. The canal traveller will already have crossed many miles of wild moorlands and will be the readier to appreciate the genius of the unhappy sisters. Some of the locks such as the Bingley Five Rise locks are made so that there are no intervening pounds and the top gate of one lock is the bottom gate of another. This grouping of locks enabled long pounds of many miles to be lock free, even although the waterway was crossing the top of England.

Another feature of the Leeds and Liverpool Canal, and one that can only be appreciated from the water, is the fact that it is carried across the great industrial city of Burnley on a great embankment designed by Robert Whitworth.

Not all the delights of the waterways are confined to cruising on the waters, for the enthusiast there are the delights of fishing, country walks, bird-watching or perhaps most delightful of all—just resting in solitude surrounded by beautiful country.

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ANGLING ON THE INLAND WATERWAYS

Angling is one of the most popular recreations on the Inland Waterways of England. The clubs are numerous and thousands of men and women come from far and wide for the pleasure of a day with rod and line on some quiet canal pound. That the Inland Waterways produce some fine fish there is ample evidence in the glass cases of famous anglers' Inns by the water-side and it is in these taverns that you will hear all the tales of the lovers of the sport.

The introduction of chemicals and oil into modern manufacturing methods has seriously affected the fish by polluting the water. At the expense of spoiling many a good fish pound progress marches on. Good fishing, a peaceful waterway and a clean one, and the mechanised comforts of modern life cannot easily go hand in hand. Nevertheless British waterways are doing everything possible to eliminate pollution of their waters and do investigate every case brought to their notice.

Most species of fresh water fish which live in still waters are found in the waterways. Roach and Barbel are often found in the pounds of a canal which runs through a built up area. In the open and clearer pounds running through the countryside where there are reeds and weeds under the banks, there are good dace and perch, and even the wily and voracious pike is still about. Carp are not frequently found in

canals but sometimes bream and gudgeon can be lured.

Passes to admit anglers to the tow paths of the British Waterways controlled by the British Transport Commission can be obtained through the many angling clubs who hold fishing rights on the Inland Waterways, and those who wish to enjoy the sport should get into touch with the local clubs.

Club and Secretary

Leeds & District Amalgamated Society of Anglers, 7, Beckett Street, Leeds, 9. *Lengths fished* :—Between River Lock, Leeds, and Apperley Locks.

Bradford No. 1 Angling Association, per A. Little, Esq., 79, Heath Terrace, Bradford, Yorkshire. *Lengths fished* :—Between Newlay and Bank Newton.

Bradford City Angling Association, per E. Stott, Esq., 209, Legrams Lane, Bradford, Yorkshire. *Lengths fished* :—Between Apperley Bridge and Bank Newton.

Saltaire Angling Association, per W. Hoyle, Esq., 3, Thompson Street, Shipley, Yorkshire. *Lengths fished* :—Between Apperley Bridge and Bank Newton.

Saltaire Angling Association, per W. Hoyle, Esq., 3, Thompson Street, Shipley, Yorkshire. *Lengths fished* :—Between Change Line Bridge (below Dowley Gap Locks) and Fisherman's Bridge (above Dowley Gap Locks).

Keighley Angling Club, per C. R. Muscroft, Esq., 208, Guard House Road, Highfield, Keighley, Yorkshire. *Lengths fished:—Between Apperley Bridge and Bank Newton.*

Garden Vale Angling Association, Secretary, 15, Spring Street, Nelson, Lancs. *Lengths fished:—Barrowford Reservoir.*

Northern Anglers' Association, per W. T. Parkinson, Esq., 8, St. Clements Street, Spring View, Wigan, Lancs. *Lengths fished:—Permission to enter on towpath to fish from towpath side only where Licensees hold Fishing Rights, also sole Rights of Match Fishing from Leeds to Liverpool in both cases.*

Marsden Star Angling Society, per H. Catlow, Esq., 135, Regent Street, Nelson,

Lancs. *Lengths fished:—Permission to enter on offside bank for Fishing Rights which may be held by the Licensees at Barrowford.*

Liverpool & District Anglers' Association, per W. Cole, Esq., 473, Smithdown Road, Liverpool, 15. *Lengths fished:—Between Liverpool and New Lane, Burscough.*

Freshwater Fish Preservation League, per F. A. Allwood, Esq., Lord Street, Leigh, Lancs. *Lengths fished:—Holding Fishing Matches from towpath of Rufford Branch Canal.*

R. Sutton, Esq., "Airville," Skipton Road, Foulridge, Lancs. *Lengths fished:—Shooting, fishing, sporting and boating in or upon Foulridge Lower or Great Reservoir, near Colne and over and upon the banks thereof.*

BIRD LIFE ON THE WATERWAYS

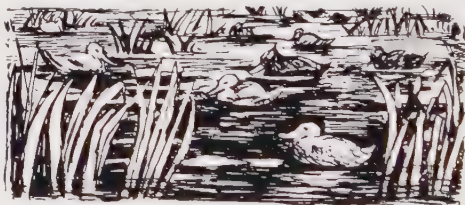
The most common birds are terns, gulls and members of the duck family. They live in the built up areas and even in the docks. In cities, mallards frequently nest in some small grassy patch near the locks. The terns and kittiwakes fly up and down the canals and are the most common types seen inland. The gull family, i.e., Blackbacks, Herrings and common Gulls generally confine their activities to the seaports and docks, but with their mobility and speed of flight they frequently make trips inland.

The shy little waterhen—a member of the rail family, whose operations are exactly like those of a submarine, is to be found everywhere on the waterways.

In the quiet pounds with their homes concealed in the reeds of little creeks and in the side ponds can be found the rarer species of bird visitors such as herons, grebes and bitterns.

The birds of the waterways are protected and cared for by the Royal Society for the Prevention of Cruelty to Animals, and the People's Dispensary for Sick Animals. Both these organisations have specially trained "bird" men who collect sick and injured birds and care for them: in particular those

who are in distress when coated with fuel oil which has fouled the waters. These sick and injured birds are collected, taken to hospital, cured, and returned to their homes on the waterways.



If, while on holiday on the canals, or rivers, a visitor finds a sick or injured bird a telephone call to the nearest branch of the two organisations will immediately bring help to the casualty.

Swans

Swans like human companionship and the folk who live on the Inland Waterways find that each bird has a personality of its own. A family will frequently attach itself to a particular boat and appoint themselves as guardians of the craft, official washers-up and knockers-up. They will hammer on the

side of the boat at dawn and earn their keep by eating up scraps from plates. They are naturally friendly birds and their hissing does not indicate ferocity, but like all birds they must be treated kindly and not teased. When their anger is aroused they can be very fierce indeed, particularly when protecting their cygnets and it is wise to keep young children and dogs away from them.



The swan has been a Royal bird from early times. There is a legend that when Richard 1st returned to England after his detention in Cyprus, where before he was ransomed he married Berengaria, his bride presented him with a pair of swans which he brought to this country. During the Middle Ages, Swanneries were common all over England and it is of interest to note that they formed part of the taxation because the owners had to pay for the privilege of keeping them. The charters have, so far as is known, lapsed in respect of the keeping of swans. To-day there are only a few big swanneries left. The Earl of Ilchester maintains one at Chessell in Dorset, and the Earl of Arundel keeps the swans on the River Arun and in Arundel Park, Sussex. There is also one on the Dee at Chester, which usually has about 100 birds, but none of these apparently are by right of charter.

During the many wars in the Middle Ages the Edwards relied on the Companies and the Guilds of the City of London for money, ships and troops, and in the time of Edward IVth two of the greatest City Companies, which were intimately connected with the River Thames in London were given the right to keep swans. At this time the Company of Vintners brought their wines from France and Spain in little ships to the Thames. The Dyers Company brought their Wode in Wherries from Norfolk and washed their work in the river ; so that they

both owned riverside wharves or "hythes." The right which the King granted allowing these two Companies to keep a game of swans on the River Thames continues to this day.

King Edward IVth appointed from his watermen a swan-keeper and each Company appointed a swan marker, which offices are still held to-day. In July of each year the Lord Chamberlain arranges that a census of the swans shall be made on the reaches up to Henley, and this is named the "Swan Upping." Opportunity is taken to mark and pinion the cygnets.

To assist in the protection and marking of the swans a Company of "Uppers" is recruited from the watermen. The term "Swan Upping" grew out of the idea of calling "All Up" when a brood of swans and cygnets were sighted. In order that the Companies should know their own birds it was agreed to mark the cygnets with a swan mark or nick on the beak. The earliest known swan mark dates back to the year 1197. The Vintners Company have a nick on each side and the Dyers Company one nick on the right side. It is a corruption of the Vintners mark which was led to the inn sign



in Whetstone showing a swan with two necks. All unmarked swans belonging to the reigning Monarch. At the end of July when the cygnets are fledged the ceremony of "Upping" takes place, a ceremony which has been maintained through the ages and is performed to-day in the old time costume of the "Uppers." They all wear white trousers. The Queen's men have red jerseys and red jackets, the Vintners, white jerseys and blue jackets and the Dyers blue jerseys and blue jackets.

Keeping in touch

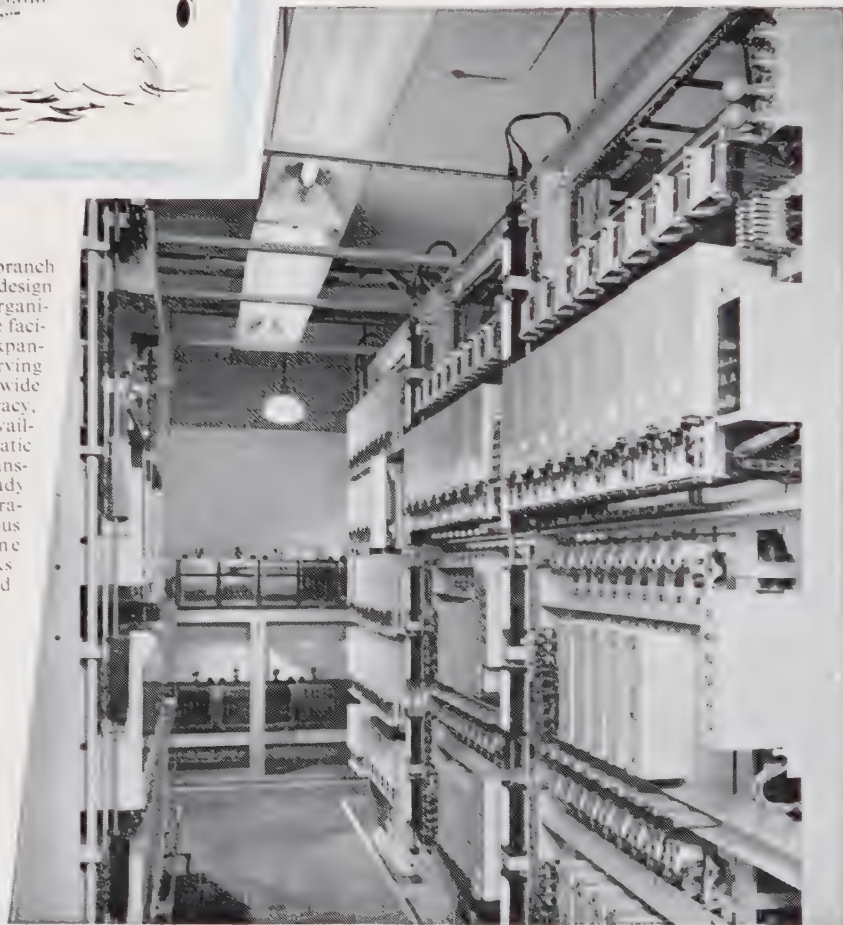
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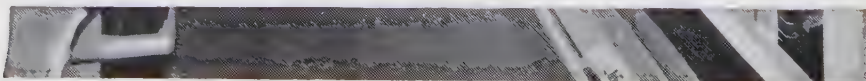


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Board of Trade and Ministry of Supply,
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Development Associations and Committees,
North East Lancashire Development Com-
mittee,

Hon. Secretary, C. V. Thornley, Esq.,
M.A., LL.B., Town Clerk, Town Hall,
Burnley.

Lancashire and Merseyside Industrial
Development Association, Director, Gerald
S. F. Ritson, Esq., T.D., M.A., 94, Market
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North West (Eastern), 28, Queen Street,
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Yorkshire (West Riding), Oxford Cham-
bers, Oxford Place, Leeds, 30761.

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There are four Y.M.C.A.'s on or near
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Y.M.C.A., 56, Whetstone Lane, Birken-
head, Cheshire.

Y.M.C.A., "Lostock Dene," Bolton Lane.
Y.M.C.A., Old Chapel, Towngate, Idle,
Bradford, Yorks.

Y.M.C.A., Moorwood Hall, Lifton Place,
Leeds, 2, Yorks.

These four hostels are available for men
only, and as they are frequently fully booked
it is desirable to write reserving accommo-
dation in advance ; such letters should be sent
direct to the General Secretary of the local
Y.M.C.A. concerned.

If anybody wishes to know more of the
history of canals there is a Railway and
Canal Historical Society which was founded
in 1954.

The Hon. Secretary is Mr. C. J. Biddle,
16, Longwood Avenue, Bingley, Yorks.

National and other Associations connected with Inland Waterways

The Association of Master Lightermen and
Barge Owners (Port of London), E. J. G.
Weare, Esq., Secretary, Plantation House,
Fenchurch Street, London, E.C.3. Tel.:
MANsion House 911-2 and 1415-6-7-8.

This Association, as is implied by its
name, exists only for the commercial side
of the canal and river industry. Its member-
ship is confined to those who use the water-
ways for commerce especially as owners of
barges, barge builders and repairers and
bargemen who operate the craft.

*The National Association of Inland Water-
way Carriers, A. Hayman, Esq., Secre-
tary, Chester Road, Manchester, 15. Tel.:
Manchester, Blackfriars 4435-9 (Ext. 6).*

Although for many years before 1953
there had been local groups of Waterway
Carriers with mutual interests, and a Canal
Association representative of the Inland
Waterways undertakers as distinct from
Carriers, it was not until that year that a
national body of waterway carriers was
formed.

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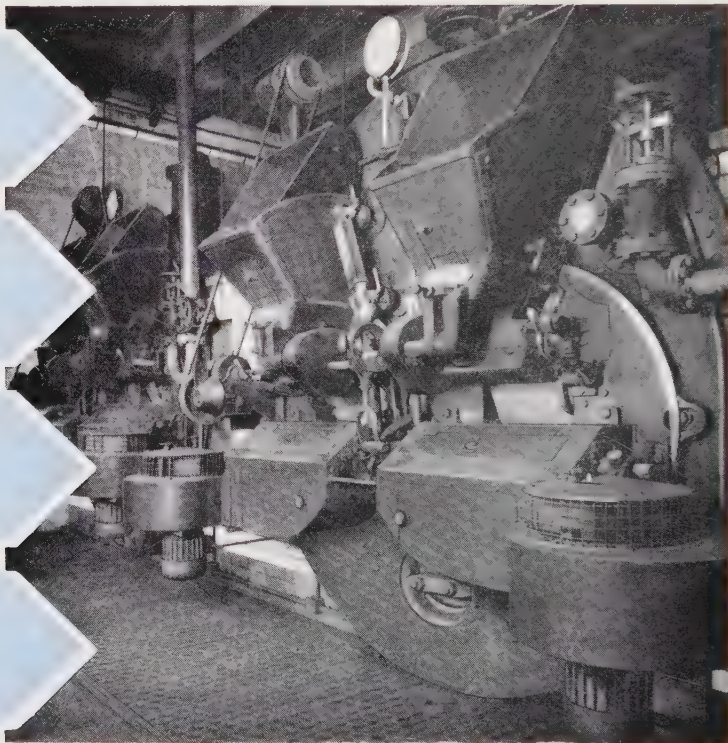
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When steps were taken to relieve the railways of certain of their statutory obligations under the Rail and Road Traffic Act, 1933, which were likely to hit at the basic traffics of the waterways, a nucleus of carriers combined with the Canal Association in seeking certain safeguards on traffic matters generally in consultation with the main line railways. It should be borne in mind that at the time the railways owned about one-third of the canals in this country, and what they charged in tolls was a matter of concern to the users of those navigations.

The need for a body of carriers, able to speak with one voice, was never more pronounced than at that time, and the organisation grew from the handful of pioneers who joined force in August, 1933, to the present strength of approaching 100 members, representing the principal carriers in the industry, and with a total deadweight carrying capacity of over 120,000 tons.



The fact of such a body being in existence when war broke out in 1939 was proved to be of importance in the national interest, as the Ministry of Transport, which set up its own Canals Division, soon called for an all-out effort on the part of waterways to relieve congestion on the railways, and minimise usage of road transport, in order to conserve rubber and fuel supplies.

In July, 1942, the Ministry of War Transport assumed control of the principal canal undertakings and carriers, but wisely delegated a large measure of freedom of action to the individual carriers in their day-to-day

operations. Unfortunately, owing to the decline in the numbers of effective craft, and the drift of skilled labour from the industry in pre-war years, the results fell short of what could otherwise have been achieved without placing any strain on the waterways but, nevertheless, the conveyance of upwards of 70 million tons of traffic during the war period was perhaps no mean achievement under the prevailing conditions.

When the Transport Act, 1947, appeared on the Statute Book, it forecast the end of canal control on December 31st on that year.

As is now well-known, the railways and principal waterway undertakings vested in the British Transport Commission on January 1st, 1948, as well as a measure of long-distance road transport.

What of the waterway carriers? With the exception of the carrying activities of certain vested undertakings which were also taken over, the carrying side of the industry (over 80% of the whole) is undertaken by independent carriers.

Through the National Joint Council for the Inland Waterway Industry and other media, co-operation has been established with British Waterways for dealing with common problems of personnel and their terms and conditions of employment, and, above all, for the retention and development of traffic suitable to waterway transport.

The activities of individual carriers are as varied in character as the craft they operate, according to whether they are in the coal, bulk liquid or general merchandise trade, or are confined to local, long-distance or estuarial cum-inland navigation work.

The Constitution of the Association provides not only for carriers operating for hire or reward, but also for a growing Associate Membership of firms carrying their own goods in their own craft.

Association of Pleasure Craft Operators on Inland Waterways, Hon. Secretary, M. P. Streat, Braunston, Rugby.

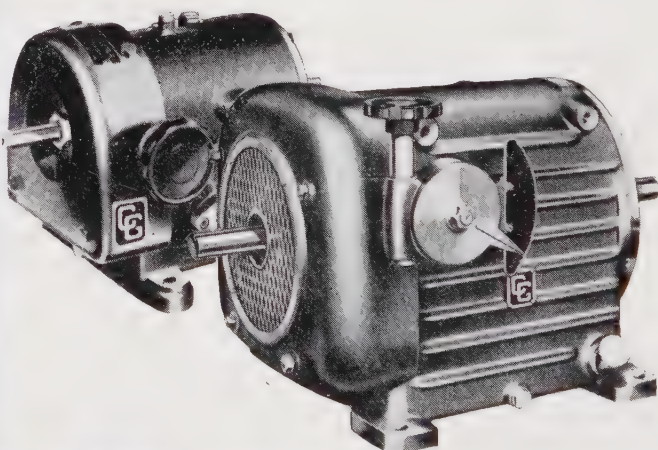
This Association of boat hiring and passenger carrying firms operating on inland waterways was formed in 1954.

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A Dictionary of Terms used on the Waterways

- Balance or Balance Beam :** The long wooden beams by which the gate of a lock is opened.
- Barge :** A name given to several classes of waterway craft, the beams of which are twice that of a narrow boat with a 7 ft. beam. Barge-master : owned his own barge and acted as a trader and carrier. Bargeman : a member of the crew of the barge.
- Bow Hauling :** Where the boat is hauled by men on the towpath.
- Breast or mitre post :** The vertical post of a lock gate on the edge opposite to the hinge ; it usually mitres into its opposite number.
- Breasted up :** When a boat or barge is made fast alongside a tug or self-propelled boat.
- Butty :** A boat which is not self-propelled and works in company with another.
- Bye-Trader :** Any trader on a waterway other than British Waterways.
- Day Boats :** Also known as open boats. Boats with no cabins used on short hauls.
- Draw :** To open a paddle or sluice to allow the water to pass through the gate of a lock. The reverse action is to drop the paddle cutting off the water supply.
- Flat :** A type of vessel used on the Mersey, and the attendant canals such as Liverpool to Leeds and the Weaver.
- Fly Boat :** In the olden days a horse boat which travelled day and night by relays. To-day any type of craft which travels both by day and night. This form of navigation is called "running fly." It is the express goods train of the waterways.
- Gauging :** A method of weighing craft and estimating the tonnage they carry by their draught.
- Heel Post :** The pivot on which a lock gate turns and which fits into the hollow channel in the masonry known as the quoin.
- Hold in ; Hold out :** Steering direction used by boatmen with reference to the towing path. "Hold in" means keep the boat in to the towing path side.
- Legging :** An old fashioned method used to take horse drawn boats through tunnels, the legger laid on "wings" or boards jutting out from the boat sides and propelled the boat by moving his legs along the walls.
- Lighter :** One of the classes of vessels used on docks and on the River Thames and its attendant canals, in the Fens, in Suffolk, and on the Bridgewater Canal. Many have a stern like a punt and no rudder. They are towed behind a tug.
- Narrow Boat :** A boat narrow in the beam, i.e., 7 feet. Usually 70 feet in length and carrying 25 tons. Also known as a monkey boat or a long boat.
- Number ones :** Boats owned by boatmen who are their own masters.
- Pound :** The length of waterway between two locks.
- Ram's Head :** A name the boatmen use for a rudder post of narrow boat. It is often bound with a Turk's head rope knot and highly decorated.
- Roving or Turnover Bridge :** The bridge which carries the towpath from one side of the waterway to the other.
- Scour :** A deepening of the channel caused by the flow of water round a bend.

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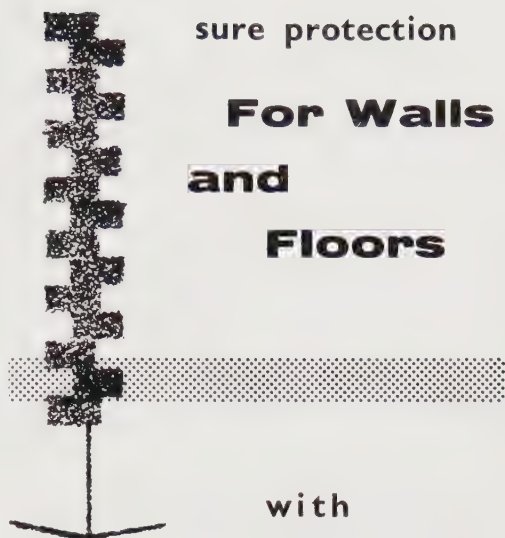
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- Screw :** Colloquial phrase used by boatmen for a self-propelled boat's propeller.
- Sill :** In a lock the masonry at the bottom of the lock on which the gates rest when closed.
- Stemmed :** A term used by boatmen for running aground.
- Stop :** A gate, or lock at the junction of one canal with another.
- Stop gates :** In long pounds there are stop gates fitted at intervals so that in the event of a burst bank, or overflowing in time of flood, the loss of water can be confined to the length of the stop gates.
- Summit level :** The highest pound of water in the length of a particular waterway.
- Sweep :** A large oar used on barges.
- Swimming:** A boat running light which easily answers to the helm.
- Tail :** The water immediately below the bottom lock gates: the head is the water in the upper pound against the lock gates.
- Wide Boat :** Usually 70 feet long by 14 feet beam. In use in canals having wide locks for short haulage.
- Wind :** To turn about. Winding place: A space provided in the waterway for the purpose of winding. Similar to a "lay-by" on a narrow road.

There is an excellent Glossary to be found in "Narrow Boat" by L.T.C. Rolt (Eyre and Spottiswoode) and also he refers to that in "Bradshaws Canals and Navigable Rivers of England and Wales" by Henry Rodolph de Salis.



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In order to deal more efficiently and economically with traffic carried to and from Leeds in Commissioned-owned craft, a new depot for British Waterways is being built at Knostrop about 1½ miles downstream from Leeds Bridge.

This primarily is to replace the present depot in Dock Street, which, being over a hundred years old, is of antiquated design.

At Knostrop there is in all a 28 acre site available for industrial development.

The scheme now in hand consists of a single storey transit shed (480 feet long by 120 feet wide by 22 feet high) with capacity for about 12,500 tons of goods. The shed, which will have adequate doorways to facilitate reception and mechanical handling of goods, will be erected some 35 feet from a steel-piled wharf 600 feet long. The wharf will be set back from the existing water line and provide eight berths for standard craft. Wharf and access and service roadways will be hard surfaced and offices, messrooms, weighbridge, fencing and public services will be provided. A road vehicle service garage and repair shop will not only accommodate the road vehicle fleet on the site but will also enable craft to be provided with fuel, stores and minor engine repairs while at the depot. Handling equipment will include mobile diesel electric cranes, fork lift trucks and shed trucks with pallets and boards.

The contract for the construction of the transit shed, offices, garage, repair shop and steel piled wharf was let to Messrs. Cawood, Wharton and Company Limited, Harrogate, in July, 1956, and progress is well advanced. In fact the new Depot will in all probability be operating early in 1958.

167

Church Paint & Varnish Co. Ltd.

Bridge Street, Church, Lancs.

Approaching Church, Lancs., along the British Transport Commission Waterways from Leeds one suddenly leaves the green fields and bluebells — woods to pass through a closely compact hive of industry — Church.

Not the least hive of Industry but almost the first to come into view is Church Paint and Varnish Co. Ltd., Paint Varnish and Putty Manufacturers for over a century. Although the size of the firm, to outward appearances, has grown very little, the output has increased a hundred fold. From 1¼ gallons of ordinary Copal Varnish per day to hundreds of gallons per week of the most modern and durable Silicone Paints, is a far cry, but this is what Church Paint & Varnish Co. Ltd., have achieved, and in addition added a large weekly tonnage of Linseed Oil Putty to their output.

The credit for most of this must go to a willing team of workers led by the present Managing Director, Mr. A. Pilkington, B.Sc. Research into the most modern SILICONE Paints has resulted in the firm's being the first to manufacture and market a Decroator's Quality *Silicone Paint* for inside and outside use with a wide choice of shades in both gloss and flat.

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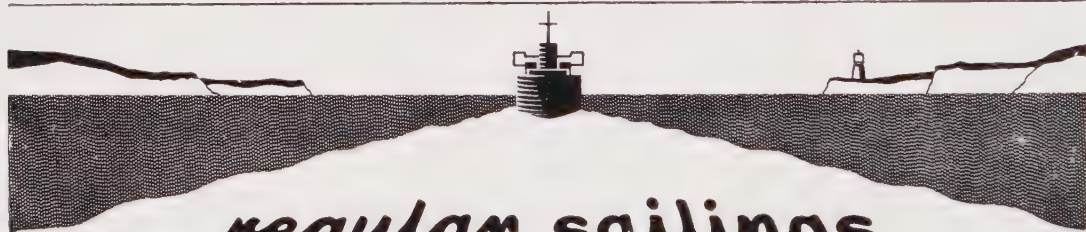
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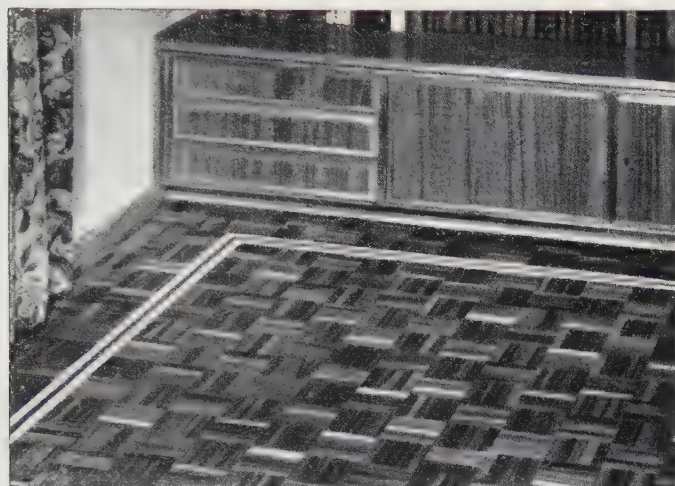
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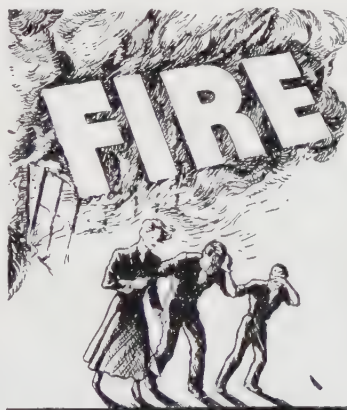
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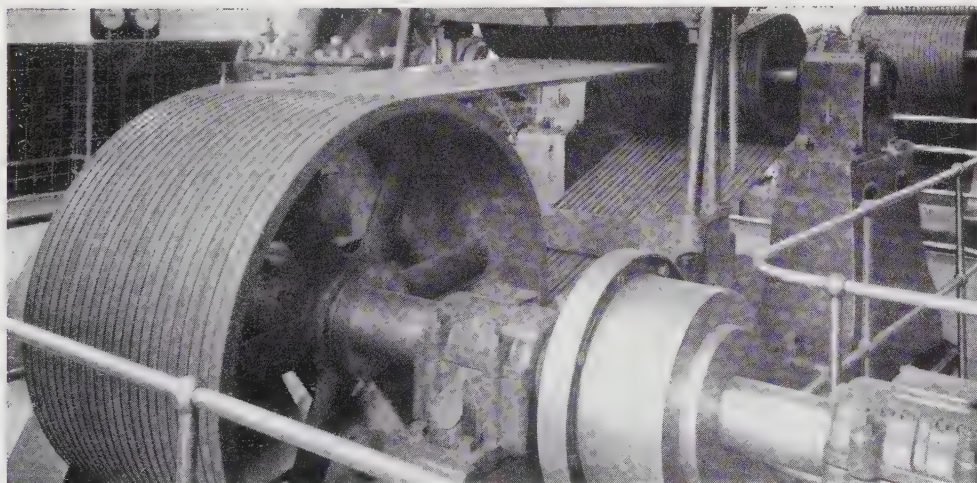
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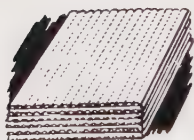
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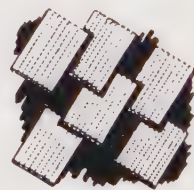
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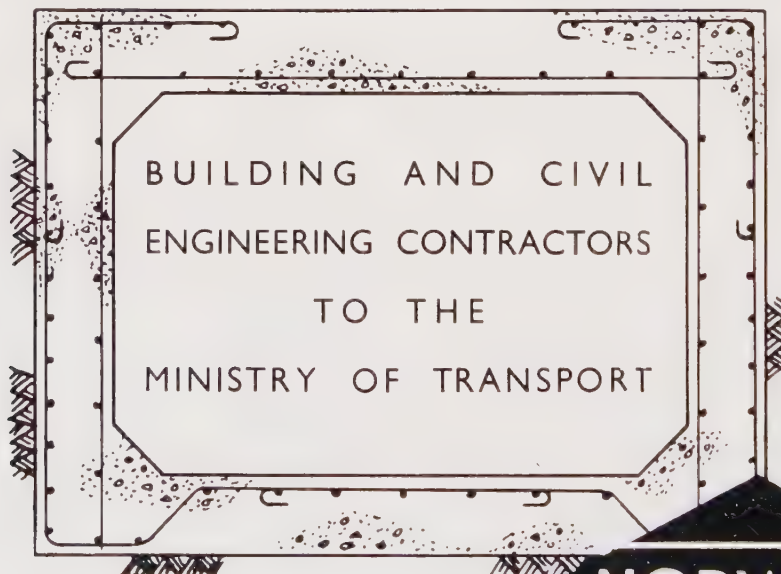
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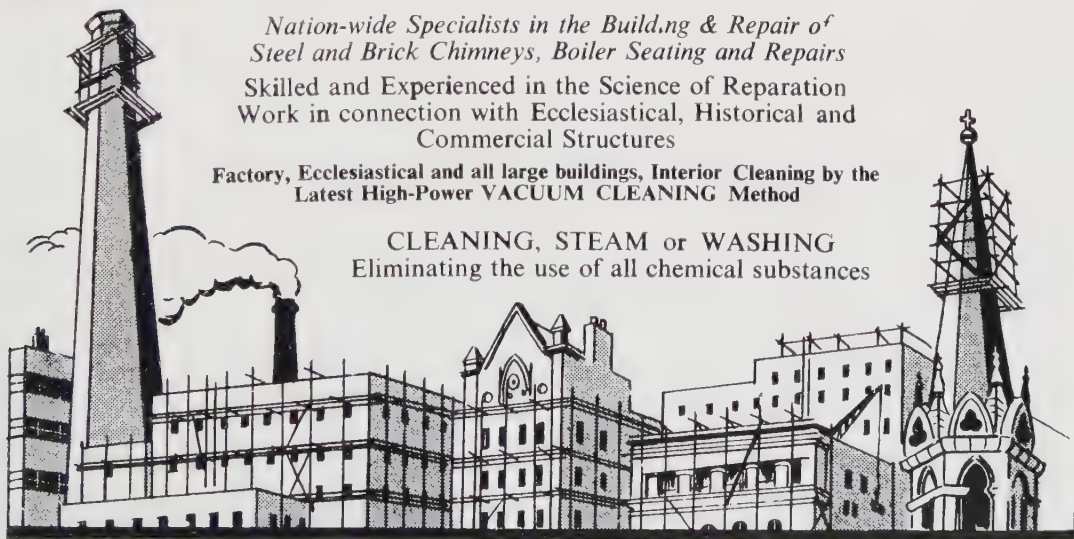
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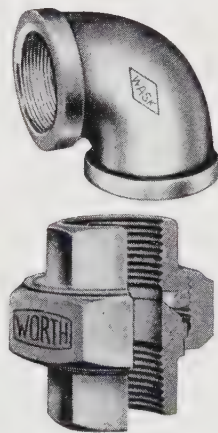
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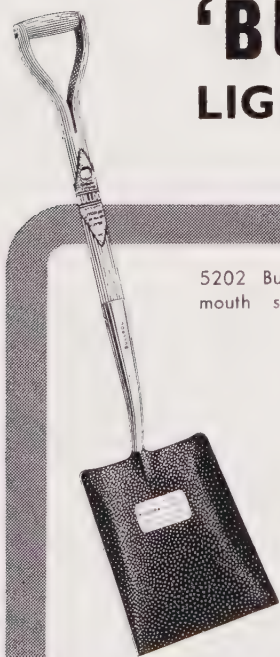
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A D V E R T I S E R S ' I N D E X

	Page		Page
Abbott, Frederick J., Ltd.	180	Communication Systems Ltd.	150
Alexander & Fowler Ltd.	202	Cooper, William & Sons Ltd.	181
Altrincham Jute Ltd.	41	Crabtree Bros. (Waterside) Ltd.	35
Ames, Thomas & Son Ltd.	198	Craven, Arthur	194
Arch Storage Ltd.	182	Crichton, C. & H. Ltd.	165
Balmers (Preston) Ship Repairers Ltd.	166	Crook & Thompson Ltd.	14
Banner, Samuel & Co. Ltd.	47	Cross, C. B. & Co. Ltd.	198
Barclay Kellett & Co. Ltd.	23	Dean Waddington & Co. Ltd.	164
Barker, Thomas & Sons Ltd.	168	Delf, W. M. (Liverpool) Ltd.	202
Barrett, Henry & Sons Ltd.	9	Dixon, James Ltd.	198
Bate, W. & Co. Ltd.	178	Drake, George (Steeplejacks) Ltd.	188
Bates Brothers (Engineers) Ltd.	5	Dredging & Construction Co. Ltd., The	46
Beacon Insurance Co. Ltd.	1	Duckworth, J. J. Ltd.	66
Benjamin Dickenson & Sons Ltd.	202	East Lancashire Conveyor Co.	20
Bidder Steeplejack & Contracting Co., The	191	East Lancashire Platers Ltd.	22
Binns, John & Son	194	Eccles, John (Oils) Ltd.	50
Bishops Wharf Carrying Co. Ltd.	199	Eckersleys	42
Blackburn Corrugated Paper Co. Ltd.	184	Elliott Musgrave Ltd.	191
Booth, Michael & Sons Ltd.	192	Ellison, J. & D., Ltd.	166
Bootle Scaling Co. Ltd.	177	Engineering Heat Treatments (M/Cr.) Ltd.	198
Boydell's	171	English Tools Ltd.	200
Bramall, W. H. & Co. Ltd.	I.B.C.	Fairburn, J. Ltd.	24
Briggs, James & Sons	O.B.C.	Farrell, O. R. & Sons Ltd.	31
Brindley, G. H.	183	Floorlife & Chemicals Ltd.	157
British Driver-Harris Co. Ltd.	84	Fordsmith, H. Ltd.	189
British Northrop Ltd.	17	Gandy Ltd.	190
Brown, C. A.	187	Gardner, Joseph & Sons Ltd.	36
Building Renovators Ltd.	4	Gibsons Overalls Ltd.	184
Burnley Overalls Ltd.	197	Glover, James Ltd.	146
Burns, J. H.	43	Gore, James & Sons Ltd.	167
Cairns, A. & Co. Ltd.	160	Greenshields Cowie & Co. Ltd.	200
Calders Ltd.	163	Hancock, Thomas	170
C. & A. Plant Services Ltd.	3	Hargreaves (West Riding) Ltd.	30
Carter Gears Ltd.	154	Hatton, Ezra & Co.	168
Cawood, Wharton & Co. Ltd.	30	Heaton, J. H. Ltd.	6
Central Heating Dodd Engineering Co. Ltd.	176	Hepworth & Grandage Ltd.	7
Church Paint & Varnish Co. Ltd.	158	Hill, George & Co. Ltd.	195
Clayton Goodfellow & Co. Ltd.	136		
Clegg Brothers (Burnley) Ltd.	164		

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7

ADVERTISERS' INDEX (cont.)

	Page		Page
Hodson, T. & J.	187	P. C. Products Ltd.	185
Holden, Chris Ltd.	24	Ramsey, G. E. Ltd.	192
Hollins Brush Co.	161	Rastall, J. & Son Ltd.	173
Howroyd, Charles	193	Rathbone Bros.	36
Hutchison & Pollok Ltd.	202	Redfern, S. & Co. Ltd.	173
Irving, J. A. & Co. Ltd.	185	Red Hand Compositions Company, The	142
Jackson Brothers	16	Refinery Equipment & Speciality Co.	
Jamieson, J. & Co. (L'POOL) Ltd.	182	Ltd.	196
Jones, E. H. (Paints) Ltd.	10	Regent Axle Co. Ltd., The	39
Knowsley Cast Metal Co. Ltd.	27	Reif & Son Ltd.	32
L. & G. Fire Appliance Co. Ltd.	179	Ribcar (Liverpool) Ltd.	204
Lawtons of Liverpool Ltd.	186	Roberts, David Son & Co. Ltd.	12
Leach, W. E. (Shipley) Ltd.	193	Robertson, Buckley & Co. Ltd.	40
Leech, W. J. & Sons (Tarpaulins) Ltd.	176	Rosser, Frank Ltd.	28
Lloyds Machinery Packing Co. Ltd.	64	Rubber Regenerating Co. Ltd., The ...	34
Lucas, Joseph Ltd.	I.F.C.	Ryaland (Manchester) Ltd.	196
Lyons, S. & Sons	178	Salisbury & Hamer	171
McGee, Robert & Co. Ltd.	8	Senior Service	21
Mallinson, R. & Co. Ltd.	204	Shorts (Lifts) Ltd.	161
Manchester Dry Docks Co. Ltd. The .	48	Simpson & Baldwin Ltd.	174
Manchester Liners Ltd.	160	Simpson Bros. (of Hapton) Ltd.	163
Maritime Insurance Co. Ltd.	177	Simpson, J. E. & Son Ltd.	165
Marsh, Peter & Sons Ltd.	156	Slingsby, Walter & Co. Ltd.	197
Maxted, Thomas & Sons	19	Smith, John (Keighley) Ltd.	13
Mayor, James & Co. Ltd.	169	Smith, Thomas & Sons (Rodley) Ltd.	54
Merlin Engineering Co. Ltd.	17	Smith's Products	186
Metal Deposits Ltd.	170	Stockwell, H. & Co. Ltd.	188
Mersey Docks & Harbour Board	86	Textilose Ltd.	25
Morrell, C. (Engineers) Ltd.	162	Thrchutley & Co. Ltd.	2
Morrell, Mills & Co. Ltd.	180	Todd Bros. (St. Helens & Widnes) Ltd.	179
Morton, Francis & Co. Ltd.	181	Triangle Valve Co. Ltd.	38
Newton, Israel & Sons Ltd.	158	United Grain Elevators Ltd.	45
Newtons (Ironfounders) Ltd.	175	Vaughan Crane Co. Ltd., The	33
Norris, Henty & Gardners Ltd.	11	Walker, Isaac & Son	169
Norris, Jowett Ltd.	23	Wallasey Corporation Ferries, The	175
Norwest Construction Co. Ltd.	190	Webster, Ernest & Co. Ltd.	44
Pacific Steam Navigation Co., The	21	Weston, Charles & Co. Ltd.	15
Painter, George & Co.	189	Westwood, J. C. (L'pool) Ltd.	26
Parke, John & Sons Ltd.	174	White, H. K. (Pre-Cast Concrete	
Pickles, Robert Ltd.	18	Works) Ltd.	195
Porter Bros. Ltd.	29	Whiteley, Fred Ltd.	167
Poulton, William & Sons Ltd.	172	Wigglesworth, Frank & Co. Ltd.	183
Pressed Felts Ltd.	37	Williams, Richard & Sons Ltd.	172
Proctor, James Ltd.	152	Worthy & Travis Ltd.	162
		Yarwood, W. J. & Sons Ltd.	19

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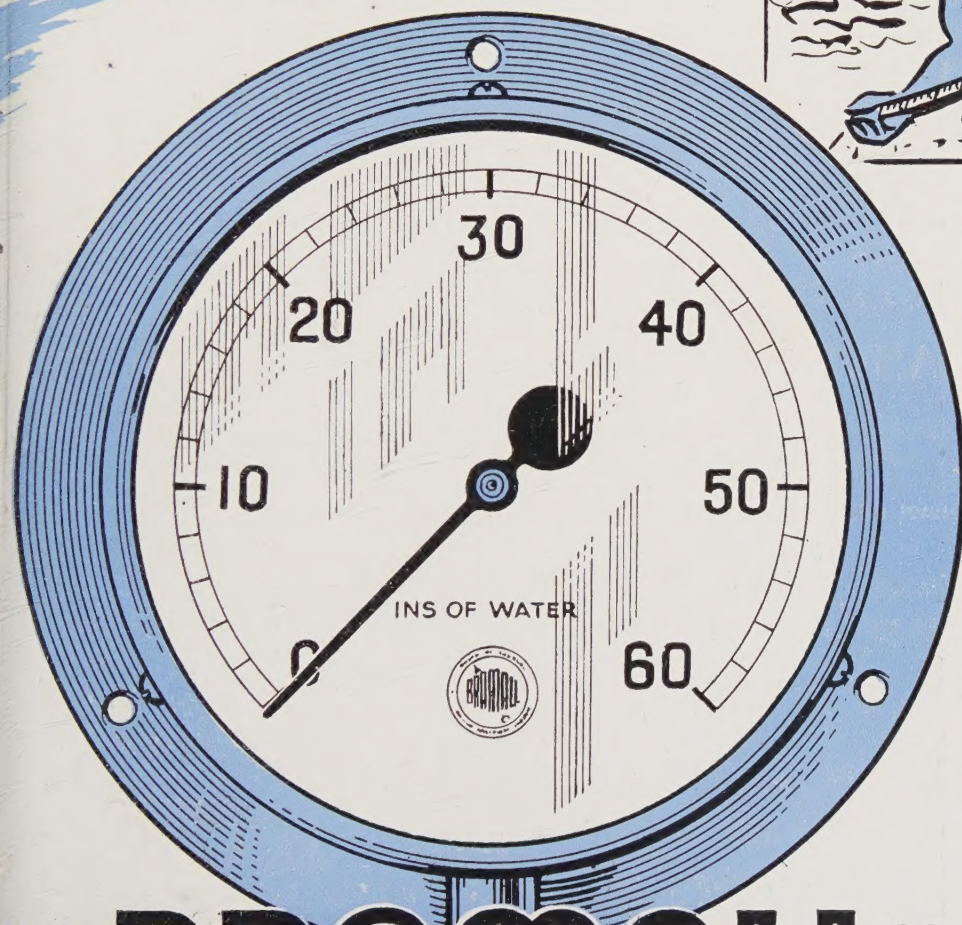
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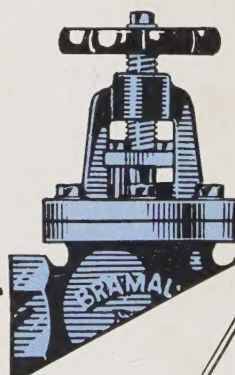
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